



The ratings race: next week Americans choose a new—or an old—president and the four-year political soap opera reaches its climax. Edmond Wright, with Steve Bruce and Nicholas O'Shaughnessy, examines the fifth PRESIDENTIAL ELECTION, its constitutional importance, the issues involved and some of the more striking moments in American presidential history (pages 14–15)

Does REAGANISM represent the end of the FDR legacy? Richard Crockett and Robert Carson review new books on recent American history and consider the difficulties of reading a map without scale, too close in time for clear perspective, too new for prerogative response (page 18)

To boldly go... Jon Turney looks at the small steps and giant leaps mooted for SPACE SCIENCE over the next decade: What part will British researchers play (page 12)

Shotgun weddings and marriages of convenience: Michael Day looks at the position of the LONDON TEACHING HOSPITALS, faced with amalgamation against the threat of retrenchment or closure (page 18)

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All change at the UGC

In its advice to Sir Keith Joseph, the University Grants Committee recommended that its own role should remain "largely unchanged". Well, it would say that, wouldn't it—to adapt a memorable phrase of the early 1960s. Remarkably perhaps there has been little public dissent from the UGC's own judgment of its own effectiveness. After the controversy provoked by its highly discriminatory distribution of the reduced university grant in July 1981, the committee's reputation seemed to plunge and its very legitimacy was called into question. Yet only three years later everyone seems to agree that the UGC is a good thing and no change is needed. It is a bit of mystery.

One explanation, of course, is that much of the criticism levelled against the UGC after 1981 was synthetic. All that universities could do was to kick the messenger as the Government that had sent the message was safely out of range. Of course the UGC did not help by tampering with the message. By pulling the cuts on the Astons and Salfords while letting off the Bath and York almost completely the committee fell into the trap so neatly described by the Labour MP Robin Cook in relation to judging beauty contests—the winners give the judges no credit for their victory while the losers blame them entirely for their defeat.

Much of the criticism was also a little dishonest. Public attacks on the UGC were balanced by private assurances not to take these attacks too seriously. When many people in universities honestly examined their own contributions they found that, like the UGC, they placed great weight on research reputations and the A level grades of successful candidates as measures of comparative quality. In a sense the rage against the UGC was the result not of a sincere belief that the committee was out of step but of a nagging fear that it was too much in step—embarrassingly so because it exposed a timid and conservative university consensus that was better cloaked.

The first answer to the mystery of the widespread content with the UGC, therefore, is straightforward: many people were simply not as angry and alienated as they pretended and many more agreed with the committee's approach although they kept their heads well down in 1981 and 1982. But there is a second explanation that is both more interesting and more relevant for the future. This is that the UGC has changed and that for the committee to say in its advice to Sir

Keith that its role "should remain largely unchanged" is disingenuous. Of course the formal constitution of the UGC has not changed. Nor has the make-up of the committee—its members are still selected by the Secretary of State to serve as individuals—and of its secretariat—its officials are still civil servants. But the position that the UGC occupies between the Department of Education and Science and the universities, and so its relationship with both, are changing fast. The most obvious symptom is the close alliance that is emerging between the UGC and the Committee of Vice Chancellors and Principals.

In the good old bad days the UGC and the CVCP enjoyed a cordial but distant relationship. They had different jobs. The UGC was conceived of as a "grand jury" of the universities, a group of disinterested academics who represented in some abiding sense the common view of the universities but quite deliberately had no stake in the immediate ambitions of particular institutions. As such the UGC was able to offer impartial and authoritative advice to the Government. The confidentiality of that advice was seen as an essential element in its privileged status. The CVCP in contrast was regarded as a lobby, dignified and responsible of course, but still a lobby. Its job was to present the universities' case to the DES, other Government departments and other agencies that were relevant to their work. The case was an immediate, specific, and detailed one—and had to be presented in public.

Today such a distinction between the roles of the UGC and the CVCP seems an anachronism. No Government is going to let the academic profession run the universities without serious check, which was the assumption institutionalized in the old-style UGC. Instead it will establish its own priorities. Of course lobbies like the CVCP (and a new-style UGC?) will be able to influence these priorities, and once these priorities have been promulgated they will be transmitted to the UGC for detailed implementation, a process which will always give the committee some room for judicious manoeuvre.

This sea change in the role of the UGC has been at work since the late 1960s when forward planning of public expenditure was first organized in a systematic way (or maybe since the early 1960s when the DES replaced the Treasury as the UGC's sponsoring department). It has gathered irresistible force since the 1981 crisis. Three

years later there can be little room for regret. For better or worse the UGC's traditional role as the confidential adviser of the Government is withering away; it now has two distinct roles instead—as the public advocate of the university interest, a lobby fortuitously located within the Whitehall machine; and as the DES's managing agent for the universities, the mechanism by which the detailed implementation of Government policies is achieved. Both roles require a much closer alliance with the CVCP than the old-style UGC could afford. Both are acknowledged implicitly at any rate by the UGC's decision to go public on its advice to Sir Keith.

So the new cohesiveness between the UGC and the CVCP is more than the result of some Social Democratic Party mafia run by their respective chairmen, Sir Peter Swinnerton-Dyer and Lord Flowers. It is a reflection of the shifting roles of both bodies. These shifts will have considerable implications for both their constitutions. The CVCP may find that its role as the exclusive lobbyist for the universities is stolen by the UGC, which may lead eventually to the need to broaden its role. Maybe the idea of an Association of British Universities, which represented not simply the managerial interest of the executive heads of universities but a broader institutional and academic interest by incorporating delegates from courts and senates, should be reexamined.

As for the UGC both the composition of its committee and the origins of its secretariat may have to be adapted to meet its new role. As more and more of the UGC's work comes to be with individual universities, or with the National Advisory Body and other parts of higher education, and less and less to do with Whitehall, the case for a civil service staffed secretariat will weaken and the case for bringing in more people from universities will become stronger. But the membership of the committee itself may also need to be adjusted, particularly its lay membership. Less than 10 years ago a UGC chairman successfully dissuaded a Labour Secretary of State from appointing a local authority politician to the committee instead of a chief education officer. The objection was not to the individual, a distinguished education committee chairman, but to any idea of having a politician on the UGC. Today those local authority politicians are sitting on the NAB committee, a measure of how far we have come and how far maybe the universities have still to travel.

At this point I have to confess to a rather shameful doublet in the sanctity of ancient buildings. I have belonged to many of the scholarly bodies concerned with their preservation—the monuments as well as the bodies—and have frequently found myself impelled into a vulgar sympathy for the ignorant visitors whose feet and hands are soiling the ancient building looking ancient rather than modern and I suspect that many of them are more beautiful derelict than they ever were when whole. The Parthenon is a good example.

I have some slides of Stonehenge with my children standing on the fallen stones and pretending to kill each other. That was in the jolly old days when you could wander around Stonehenge freely. If the only people now to be seen wandering about are a few approved scholars I think I shall keep away. There is nothing the matter with such scholars but they do have a depressing effect upon buildings.

Fortunately other countries have livelier ideas. Lord Byron may have written his name upon the Temple of Poseidon at Cape Sounion, thus increasing its value, and Walter Scott may have left his name on the old window in Edinburgh, but these pale into insignificance with the possibility of having your name inscribed on the Great Wall of China. I cannot think why my name should be on any wall, but it might look well on a small corner of the Great Wall. The only problem is that the Chinese want £40,000 for it. Perhaps I will try to inscribe it on a replica of Stonehenge where it won't matter.

Patrick Nuttgens



Fifth Column

It seems that a solution to the nagging problem of Stonehenge is in sight. That is to build another. It could be done, we are told, with 30 men rather than the 1,000 or more who built it originally and would cost less than £500,000 pounds, which is peanuts in modern building costs even if it is carried out in Welsh stone rather than the polystyrene that one feared. The only problem is where to put it.

"Seeing two full-sized Stonehenges at the same time would look ridiculous," said a member of the Heritage Commission to report on alternative solutions to the problem. He has a point. The advantage on the other hand would be that the two million feet that tramp the site annually would wreck the new one rather than the old.

Until about a century ago local farmers used the stones—both the blue stones and the sarsens—to make roads and farm tracks. And you could buy a special hammer in the blacksmith's forge in Amesbury to knock a few pieces off the standing stones as souvenirs. I wonder how much of the irreplaceable and unique form of Stonehenge is due to vandals or respectable gentlemen wreckers.

Nor is there a shortage of other Stonehenges or blis of it on various hilltops. One is to be found in Yorkshire hidden by great trees only a few miles from Swinton Park where Conservatives gather to discuss their fortunes and presumably go down to the early nineteenth-century Druid's Temple in the moonlight. It doesn't look like Stonehenge to me but that may be only because of its setting.

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Britain's share of world science in steady decline

by Jon Turney
Science Correspondent

British science is in decline. This gloomy conclusion is given strong support by figures published this week from the Science Policy Research Unit at Sussex University. And the research has been published as it becomes clear there will be little or no relief for the hard-pressed research councils in next year's science budget.

The new figures strike at the heart of a debate bogged down in Nobel prize counts and attempts to measure research funding. The researchers have analysed data on a broad range of scientific literature with results suggesting that Britain's share of the world's basic research has been declining steadily since 1973. Their analysis, based on data from 2,000 scientific journals, confirms a trend suspected by many, but hard to prove.

Ironically, the news coincides with the final stage of this year's public expenditure review, which will fix the Department of Education and Science's science budget for 1985/86. The heads of research councils are already speaking in terms of an implied cut in the value of the science vote, rather than the increase they want.

The Advisory Board for the Research Councils has pressed hard on four fronts this year for increases in pension costs, borne by the research council themselves rather than the Pymester-general; movements in exchange rates, the only point conceded by the Treasury last year, but since grown much worse; restructuring costs

in the Agriculture and Food and Natural Environment Research Councils; and the shortfall in money for "alpha" rated university research grants.

The pension argument has not found favour with the Treasury, which wants to put other Government agencies on the same footing as the research councils, not vice versa. The ABRC still hopes for some extra money for restructuring and grants. But as the DES overall budget is expected to be held level, there is little prospect of much help here.

The scientists' main hope is the proposed abolition of the minimum student grant, discussed in the crucial Cabinet meeting yesterday. This would release £8m to £10m, and most of this would probably find its way into the science vote and there has been speculation that ministers would like to go further and introduce tuition fees for the student children of richer parents.

But this would still fall short of the amount needed to restore the research councils' spending power.

For example, in the Science and Engineering Research Council's new annual report, published this week, Professor John Cadogan estimates that the council's science board alone needs £15m to £16m extra a year. This includes £7m a year to fund normal "alpha" grants, £4.5m a year to replace outdated equipment previously funded on research grants, and £4m a year to fund new work in protein engineering, chemical sensors, and low dimensional structures.

The research community's arguments must now focus on next year's public expenditure debate, and they will be anxious to exploit figures like those in the SPRU study.

Sir David Phillips, chairman of the Advisory Board for the Research Councils, said: "If we see our future in high technology, the Government must invest in basic research." Professor David Smith, biological secretary of the Royal Society, said the survey showed basic science was in a bad way. He felt this stemmed from "the obsession of the Government with applied science, and the feeling that basic science can look after itself."

Professor Smith and others believe the scientists must now come up with more figures to back their arguments, and this is the aim of a new study just started by the Royal Society. A second new initiative prompted by the decline in science funding is the formation of an ad hoc Working Group on Research Funding, involving many of the larger learned societies, including the Royal Society, the Royal Society of Medicine, the Royal Society of Biological Sciences, and the Royal Society of Chemical Sciences.

Professor Joe Lamb of the Physiological Society, one of the group's instigators, said: "This Government does not seem to believe in the future. Our spending on basic research is far below that of our industrial competitors, and is due to fall even further behind in the coming years." The group plans to gather research statistics and take this message to MPs next year, in time for the next budget round.

The great British decline, page 11



Martin Riley, a third year industrial design student at Manchester Polytechnic won a Royal Society of Arts bursary award for a trip to Japan with this design for a video stills-camera.

UGC 'needs new look'

The membership of the University Grants Committee will need to be radically revised if it is to pursue a more selective research policy, Sir Owen Chadwick, president of the British Academy, said in Birmingham this week.

If the UGC took a more directive role in research it would no longer be right for all its members to be chosen by the minister of the day. Instead some members of the committee should be chosen by vice chancellors or individual universities, he said. Nor were the existing UGC members chosen because they were good judges of research.

Sir Owen, former regius professor of modern history at Cambridge, was speaking about the predicament of the humanities at the opening of Birmingham's new institute for advanced research in the humanities.

The keynote of his speech was scepticism about the UGC's new enthusiasm for selectivity. When money was in short supply, it might be inevitable but it still ran into formidable difficulties. Genius was unpredictable and difficult to assess, the number of people able to judge at the frontiers of knowledge was small, and those who took decisions about selectivity tended to be no longer young.

A university without research would have too few people with "that inner quest which makes it a university", a condition found among polytechnics. "First-class teaching generates research. It is as inevitable as sunrise."

Sir Owen also attacked the UGC's intention to discriminate against small departments. Small departments in subjects like Russian, Chinese and Japanese were vital to the nation.

Bonus for two hardest hit

Salford and Aston, the two universities worst hit in the 1981 cuts, have each been given an additional £250,000 grant, because of the impressive way they coped with contraction.

The universities were told of their good fortune this week by the University Grants Committee. The money is not earmarked and is additional to the provisional recurrent grant allocation for 1985/86 revealed last week.

The UGC decided last month it wanted to reward only Salford and Aston and wrote asking them how they would spend the money. The decisions and amounts were confirmed at the UGC meeting last Thursday, but the universities will not be able to increase their student numbers as a result.

Sir Peter Swinnerton-Dyer, chairman of the UGC, this week refused to comment on the reasons for the decision. But Mr Stuart Bosworth, registrar at Salford said they had been told it was in recognition of the way the university had responded to the task it was set in 1981.

Then its income was cut by 44 per cent and student numbers by 30 per cent. Since then 150 academic and academic services staff have left the university, which has physically shrunk by one-third. It is on line to meet its reduced student targets and has managed to change a projected deficit of £5.5m to £350,000.

Mr Bosworth said: "It is clear that the UGC is impressed with the way we have handled a massive task. I think they have a sneaking suspicion that if this is the kind of response we have made, maybe they were wrong to give us quite so much hammer."

He said Salford intended to use the money to strengthen its research base, to appoint eight new academic staff and to provide more money for the library, particularly for research journals.

Aston received a 30 per cent cut in income in 1981 and was told to reduce their student numbers by about 1,000. Since then more than 200 academic staff and a large number of technical and secretarial staff have left.

The awards are certain to invoke envy among other universities which were either hard hit in 1981, or have recently been refused money for new developments.

Professor John West, vice chancellor of Bradford, which suffered severe cuts in 1981 said: "There are no sour grapes from us. I think they are in a desperate need."

Visitors support OU cause

by Felicity Jones

The Government-appointed visiting committee to the Open University will advise Sir Keith Joseph, the Secretary of State for Education, later this month that he has been too harsh in his treatment of the university's grant for the next three years.

The OU consistently said that the grant levels proposed would lead to a £13.5m shortfall in its resources by 1986. This figure has never been accepted by the Department of Education and Science although it now recognizes how that figure was reached.

The draft of the report, discussed by the visiting committee this week is not completely favourable to the OU's cause and has not accepted the argument for "student fee differentials which would help maintain enrolments in poorer parts of the country like Northern Ireland and Yorkshire."

Nevertheless accepts that the OU would have a serious problem if the grant levels were imposed. So it suggests a modest increase in fees, efficiency savings, greater use of computer facilities and proposes that a DES team made under the professional,

industrial and commercial updating scheme (PICKUP) should be written off.

The committee has carried out an intensive study of the university's finances in particular for 1985/86 which is considered to be the crunch year to try and identify pockets of money which could get the university out of its predicament.

The recommendation not to repay the PICKUP loan will be controversial but could radically alter the whole complexion of the problem. So far the university has borrowed £1.7m of the £2.7m loan facility extended by the DES under the scheme over three years.

Professor Ralph Smith, pro vice-chancellor for continuing education, has been arguing for the loan to be transformed into a grant from the date of the agreement which never stated how the loan should be repaid.

Professor Smith, a member of the Manpower Services Commission's Open Tech steering group, argues that it is grossly unfair to penalize the OU when the MSC is distributing large grants for the same type of programmes with no strings attached.

Eleven v-cs join competition for London's top job

by Ngalo Creque

Eleven vice chancellors or heads of school are among 20 names being seriously considered for the vice-chancellorship of London University.

First choice for the selection committee was Professor Randolph Quirk, the current vice-chancellor, but he has turned them down saying he wants to return to research when his term of office expires in August 1985.

Easton, the next favourite on the list is Lord Pym, former director of Imperial College since 1979 and a distinguished

Other London college heads on the list are Sir James Lighthill, provost of University College since 1979 and an eminent scientist.

Professor Peter Moore, new principal of the London business school and a former deputy chairman of the University Grants Committee and Professor Dorothy Wedderburn, principal of Bedford College, who is also on the lists of other universities with vacancies, as well as being a candidate for her own college when it merges with Royal Holloway.

Dr William Taylor, the principal of London University, and former direc-



Malcolm Bradbury on the image of the universities; 12

tor of the Institute of Education, is also a strong candidate.

Other vice chancellors are Dr Ewan Page of Reading, Dr Basil Weedon of Nottingham, Professor Laurence Martin of Newcastle and Professor Frederick Crawford of Aston.

Professor Janet Bateley, professor of English language and medieval literature at King's College, London, is being considered as are two names from industry, John Brown, technical director of Marconi Electronic Devices Ltd and a former London professor, and Professor John Cadogan, research director of BP.

On the medical side are Dr Alan Betts, principal of the Royal Veterinary College, Professor Colin Dollery, professor of clinical pharmacology at the Royal Postgraduate Medical School, and Dr Malcolm Godfrey, of the Medical Research Council.

They join Sir James Gowans, secretary of the Medical Research Council, Dr I. Kelsey Fry, dean of St Bartholomew's Hospital Medical College, Professor Norman Morris, professor of obstetrics and gynaecology at Charing Cross and Westminster Medical School, and Professor Margaret Turner-Warwick, professor of medicine at the cardiothoracic Institute.

Letters to the editor

A substitute rather than an aid

Sir, - The Department of Education and Science Report on Education 100 attempts to project demand for student places to the year 2000 with the proviso that adjustments may need to be made every two or three years. It would be alarming if as has so frequently happened in the past, this type of paper were to become a substitute for rather than an aid to policy, and that successive governments were actually to take these projections seriously.

The report itself can be criticized on many grounds. The arguments offered in support of predictions concerning the effects of social mobility and participation by mature entrants are much too lightweight to bear the conclusions deduced, and the whole basis of prediction leans heavily on the A level system, this remarkable device which simultaneously distorts the thrust of school education and closes the route to higher education for many while not functioning as a particularly

useful preparation for undergraduate work. A demographic analysis can be very useful, not in order to perpetuate or slightly improve present assumptions, but to enable significant questions to be asked. To give some examples, why is it that no more than about 15 per cent of the age population participate in higher education? Why is social class such a dominating factor in determining participation? Why is the participation of women never more than 80 per cent of men? Are the current numbers appropriate for the present educational needs of contemporary society?

There are several answers which could be given to questions such as these. It may be that young people have better things to do than higher education as currently presented. Maybe there is a desire but provision is seriously lacking. It could be that the arbitrary academic and financial obstacles are too great. Alternatively, these figures could be just right to meet both

individual aspiration and societal needs, and nothing needs to be done other than to project numbers into the future. However, these questions do follow from the data and it would seem more appropriate to address ourselves to policy considerations than demographic projections.

The case for a serious policy review is that the social environment which directly affects higher education between now and 2000, is substantially different to that of the preceding years which supplied the data. The microelectronic era demands a more educated society not only as suppliers and wealth creators of information technology against severe international competition, but also as exploiters of the opportunities provided in all realms of commerce, industry and community - we need effective managers of the new telematic dimension, we need educators, sociologists, humanists concerned with the leisure of work, the opportunities of leisure,

the development of the community, the encouragement of localized democracy.

Certainly we need, as the Butcher Report indicates, many more electronic engineers, computer scientists and mathematicians, but we also need growth in other disciplines. We cannot support a national policy which would offer two more engineers for the loss of three non-engineers; both types are increasingly needed to provide the society of the immediate future.

The case for higher education is very strong at present. If those of us in higher education could concentrate less on counting students and more on convincing the public of the enormous benefits we can offer to society, then even governments might be persuaded.

Yours faithfully,
J. M. DUBBEY
Dean, Faculty of Engineering,
Polytechnic of the South Bank,
London.

Naming names

Sir, - I regret the somewhat flippant headline to Bernard Crick's column (THES, November 2) for what he has to say is of the gravest importance. There has been a surprising lack of comment about the identification of students at the Polytechnic of North London and yet the issue is one which ought to concern the whole academic community. To inform or not to inform? Like Bernard Crick, I am not an absolutist although I can conceive only the most extreme cases where I would be prepared to name students; and the case of the Polytechnic of North London is certainly not one in which, under any threat, or court order, would I be prepared to obey an instruction to identify.

The matter is one of such importance that it would be most helpful if the THES were able to initiate general debate on the principles, and the problems, involved.

Yours sincerely,
JOHN SAVILLE,
Chairman,
Council for Academic
Freedom and Democracy.

White Paper peace moves agreed

by Patricia Santinelli

Manpower Services Commission proposals which include a return of £65m to local authorities and open the way towards implementation of the White Paper Training for Jobs, were unanimously agreed by the Association of County Councils this week.

The executive's agreement is likely to avert the threatened breakdown between the local authority associations. The Association of Metropolitan Authorities is expected to endorse similar proposals at its meeting tomorrow.

The AMA said that the deal offered the opportunity to make sense of the incredible chaos that poor judgment and the ill-considered White Paper had brought about.

Last week the AMA threatened to withdraw from the Council of Local Education Authorities and work for its abolition if the ACC executive endorsed a motion from its education committee for a "go it alone" policy on the White Paper.

The proposal has emerged as a result of discussion between Mr Bryan Nicholson, the new MSC chairman, and the two associations last Friday. The meeting took place at the request of MSC members.

Under the proposals the MSC has agreed to return each local authority the funds deducted for 1983/84 by the Government under the rate support grant for non-advanced further education. In return each authority will have to ensure that the money is spent on work related to non-advanced further education and be able to account for the expenditure. The local authority associations are charged with ensuring that MSC money is spent in each local authority.

The MSC also proposed that local authority associations should join an MSC working group to review non-advanced further education. The membership of the group and its terms of reference are open for discussion but it is expected to address itself to machinery and guidelines for expenditure in 1986/87.

The group proposed by the MSC does not include the Trades Union Congress and the Confederation of British Industry as originally proposed by the commission. At the request of the ACC, the MSC has agreed that for the time being the non-advanced further education review should be undertaken only by the commission and the local authority associations. It hopes later to include both unions and employers.

An agreement is reached by the AMA, it only remains for the Government to agree to the MSC proposals for the White Paper, first published on January 31, to become a reality.

Unions seek talks on salary erosion

by David Jobbins

The leaders of the university and college lecturers' unions are seeking early talks with the employers over the continued erosion of academic salaries.

In both sectors salary erosion has been identified as both the immediate and longer-term problem and officials hope to open formal discussions in advance of detailed negotiations on next year's pay claims.

The National Association of Teachers in Further and Higher Education is aiming for an early meeting, probably later this month, of the Burnham further education committee. The Association of University Teachers wants to tackle the employers over a joint approach to the Government before it gets embroiled in detailed talks early next year.

Their shared concern is that salary levels under cash limits are falling not only behind inflation but behind pay levels elsewhere.

Natfhe has set the long term aim of restoring the Houghton relativities of 1974 but its executive will today firm up an outline policy which centres on a return to the Clegg/Wood relativities of 1980 as a first step. The draft claim will then go to a special salaries council in December - if the union's national council this week agrees to bring the meeting forward from February, the date provisionally set by the annual conference.

Union leaders want to bring their campaign in line with the school unions - but there is likely to be some opposition. Some of the smaller regions are expected to vote against this, while one of the largest - the north-west - is critical of the way in which strategy is being determined so early in the pay round.

In any case leaders hope their demand for an early meeting with the employers in advance of negotiations will be endorsed. Mr David Trisman, Natfhe's negotiating secretary, said:

"We will be wanting to know from the employers that they value the post-school education service at the level Houghton said it should be valued at."

The union believes that if a consensus can be forged, it will provide the basis for a joint approach to ministers for the money involved. Even restoration of Clegg/Wood salary levels would have meant a rise of more than 20 per cent before this year's award and updated figures in excess of this figure were expected to be reported to the executive today.

A possible union/employers approach is the key to the strategy adopted by leaders of the AUT. Its general secretary, Ms Diana Warwick, said: "We have to convince the Government that it needs to treat the universities differently and specially."

The union executive believes that only an independent review, either a one-off like Houghton or a permanent entity such as the doctors' and dentists' review body, is the only way to break out of the downward spiral caused by cash limits.

The 1985 claim could be ready for ratification at the union's winter council in York next month, but if that proves impracticable a special salaries council will be called for February.

The non-TUC affiliated Association of Polytechnic Teachers has stolen a march on the other Burnham unions by circulating its own claim to employers' representatives. It wants parity with the universities for staff teaching advanced work in the public sector - and claims they have lost out by about 17 per cent since Houghton.

There are early signs of a renewed further education claim within Natfhe with argument within the outer London region for a flat rate wage increase coupled with automatic transfer from the lowest transfer from the lowest salary grade. Senior union officials fear this could threaten unity within the union when it is most needed.

Human interest

Sir, - I should like to point out that there is a humanities unit at Plymouth Polytechnic - a fact not easily discerned from your article, "Another flagship for the poly fleet" (THES, October 19); that it works on degree courses throughout the poly; and that it helped to plan and for the past seven years has been teaching on a BA degree in conjunction with the College of St Mark and St John. For the record, as they say, the humanities staff and that of the BA in social policy were part of a "rationalization" scheme advocated by the Department of Education and Science: an attempt to save taxpayers' money which resulted in a shot-gun marriage with the two parties later going their separate ways leaving the baby squalling on the doorstep.

These are parochial, domestic matters which do not really concern your readers. What is of wider interest is the belief, evident in your article, that "technological education" is somehow about to replace education grounded on a literary base, instead of being added to it. A number of recent surveys (notably the one on engineering education from Leicester Polytechnic last year) have stressed the continuing importance of literacy and a moment's consideration will show that the myth of "replacing" one by the other is nonsense, however convenient for current political concerns.

It was and is to see you endorsing this myth and neglecting the opportunity of showing the strength of disciplines other than the technological. Psychology is exceptionally strong at Plymouth Polytechnic and the social sciences are not solely concerned with helping out-of-work Cornish fishermen, however laudable that may be. One expects the senior educational journal to do rather more than endorse the public relations work of an institution in the light of conservative demands that higher education be the saving handmaiden of a sick economy. Of course that has its uses and we all know the virtues of being political these days. But there are limits.

Yours sincerely,
JOHN DANIEL,
Head of Humanities Unit,
Plymouth Polytechnic.

Still doing it

Sir, - In answer to Dr Collin Jones's query (THES letters, October 26): "It is not yet clear how academics do it (but research is continuing)."

Yours faithfully,
D. P. FOWLER,
Jesus College, Cambridge.

Sir, - University lecturers only do it for 30 weeks of the year.
Yours sincerely,
Dr J. LONGHURST,
Leeds Polytechnic.

Sir, - Polytechnic lecturers do it according to CNA regulations.
Yours sincerely,
Dr C. A. LONGHURST,
University of Leeds.

Arty facts

Sir, - Marcia Polinton is right enough in her claim that art history needs a shake-up (THES, October 26). As a fairly well paid and fairly agreeable employment it has naturally attracted a substantial proportion of the privileged, and this no doubt to the detriment of its objectivity as a discipline.

However, I would like to take up one or two points. Some credit for the expansion of art history in the late 1960s may well be due to Sir Kenneth Clark's *Civilization* but at least as much must surely go to the Coldstream Report which insisted that art students be required to make a serious historical study of their subject. Art colleges up and down the country discovered an urgent need to employ an "art historian". As the established historians were too few to meet the new demand (even if Coke-ton Technical College and Art School had proved attractive to them) the vacuum was filled by a new breed of self-taught (and none the worse for that) amateurs. Some of the new intake continued to identify with the *ancien regime*, others couldn't or wouldn't. Hence, in part at least, the ideological rift which Marcia Polinton discusses.

Marcia Polinton seems to be in contact with a singularly lively group of students. I have no complaints.

PhD completion

Sir, - For the past few years, you have run articles giving the impression that the proportion of PhD students who complete successfully is low.

I have in my possession, data on 42,969 students in 76 subjects who embarked upon PhDs and who left university in the six years 1977/1982. Of these students 78.6 per cent completed their degrees successfully. The rates of successful completion were: education 60.1 per cent; medicine 81.4 per cent; engineering 82.5 per cent; agriculture 83.3 per cent; science 85.1 per cent; social science 67.0 per cent; professional and vocational subjects (eg architecture) 66.7 per cent; languages 67.5 per cent and other arts subjects



Lord Clark: Inspiration

(well, not many) in respect of the students I have taught, but no one ever attempted to drag me "screaming into the 1990s". Any dragging tended to be the other way round. No one ever buttonholed me with an urgent plea that I catch up on Derrida. And as for "settling down with that *Burlington Magazine*" - what that was did.

No doubt Mr Clark Polinton means what she says when she advocates students "thinking for themselves about methodology". I imagine prerequisite of this would be some hard looking at Marx and Freud as the joint begueters of the new criticism. The student would then be in a position to evaluate the more sophisticated insights of Althusser, Lacan et al. However such a programme

would be time-consuming and the risk is that short cuts would be taken leaving us with a body of students having a command of little more than the jargon. A new, defensive, orthodoxy would emerge, even less capable of usable and cogent insights than the old. May I end with an anecdote?

I once heard an architectural historian of some distinction address himself as a visiting lecturer to a group of what were then known as college diploma students. They were mainly working class and their academic ambitions were not deemed to be of the highest. During the lecture I had been uncomfortably aware of a gulf developing between speakers and audience. At the end the lecturer asked for questions. None seemed forthcoming. Then - a spark leapt the gap! "How much do you earn?" one lad demanded to know. Needless to say he got no straight answer. His question was brushed aside as being at best tangential. Of course it was not. Pursued, it might have thrown fascinating light on the then state of modern architecture. With hindsight I am inclined to view the questioner as a pioneer structuralist endeavouring to foreground a new problematic.

Yours sincerely,
A. W. CORLETT,
Splash House, West Beach,
Shoreham, W. Sussex.

Lecturing skills

Sir, - I was persuaded to write this letter on reading Diana Warwick's remark (THES, October 27), "... usually because they or their institutions don't believe they need to be taught to teach" not just because it is so blithely silly, but because it is the currently conventional wisdom.

It is, of course, a matter of great difficulty to decide what qualities a good lecturer is meant to possess, still more to decide how those qualities should be imparted to the lecturer by others.

To assert that lecturers can be "trained" to be good communicators is ludicrous. They can be "trained" to be better than abysmal, no more than that, and the training will be that provided by speech consultants etc.

That training will not equip the lecturer with style, imagination or a personality and, lacking a disciplined display of these, a student might be as well off with a book.

Really good communicators are hardly ever found in the ranks of successful researchers, and vice versa. Fortunately, chance has provided most universities with a supply of both (these essential personnel); they are equally valuable and they ought to be equally rewarded.

The problem of how one goes about finding good new communicators or finding good new researchers is beyond me. We can at least start with one basic fact; they are not the same animal.

Yours faithfully,
A. J. BRIGANTIN,
Lecturer in mathematics,
City University.

Two poles

Sir, - Professor Pahl complained about my review of his *Divisions of Labour* (THES, October 26) on two counts.

The first is that I talked in terms of three economies - formal, informal and household. I had of course noted that he thought the distinction over simple. Since, however, it has now become common usage (partly because of Pahl's own earlier enthusiasm for it) I decided that, in explaining what the book was about, it would be clearer to the reader than his more complex alternatives.

His second complaint is that I did not do justice to his final chapter, and branding that "polarization" is identified as a major theme of the book. I hold to the views that I expressed in the review.

Yours sincerely,
PETER WILLMOTT,
Polytechnic Studies Institute,
London.

Letters for publication should arrive by Tuesday morning. They should be as short as possible and written on one side of the paper. The editor reserves the right to cut or amend them if necessary.

Students take on NCB in travel payment row

Student leaders are claiming a partial victory in a row with the National Coal Board over travel and accommodation payments to striking miners who are continuing to study for degrees.

The National Union of Students was alerted to disparities in treatment of student miners, with some NCB areas paying travel and lodging expenses and others not.

Now, according to the NUS board's industrial relations director, Mr Ned Smith, has directed all areas to fall in line with national policy and pay the expenses.

About 150 students are involved, studying mining or engineering at four colleges - North Staffordshire Polytechnic, Trent Polytechnic, the

official at the London School of Economics has resigned and another yesterday faced a vote of censure over possible illegal payments to striking miners.

Mr Ed Lucas, the union's general secretary, announced his resignation after being advised that a cheque he had signed to the East Midlands Cooperative Society could constitute anti-trade unionism.

Mr Lucas and union treasurer Mr Michael Moszynski had previously opposed the decision by a union general meeting to send money from fruit machines in the Three Tuns club to the miners. Mr Moszynski, who had not filtered in his opposition to the plan, last week refused to resign.

The NCB said that apprentices attending college would continue to receive expenses but would not receive wages until they fulfilled the requirements of reporting for work. An official was not sure what the position of NCB-sponsored students on block release courses where daily attendance at their place of work was not required. Meanwhile a senior student union

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Plant breeders criticize exclusive research relationship

British plant breeders may lose ground commercially because of the Agricultural and Food Research Council's exclusive tie-up with the new Agricultural Genetics Company.

The criticism was made last week by Professor Harold Woolhouse, director of the John Innes Institute in East Anglia, one of six AFRC Institutes with links to the company. Professor Woolhouse believes the company has taken too long to decide about the potential of new discoveries, and other potential investors may be deterred by the slowness.

The company was set up last year to exploit discoveries in plant genetic engineering and molecular biology into the market, in the same way as the better known Celtech commercializes research in Medical Research Council laboratories.

The company, backed by the British Technology Group, Ultramar and Advent and Biotechnology Investments, has exclusive rights to look at such work in AFRC institutes. Celtech has to have a similar arrangement with the MRC, but this no longer holds.

Directors of other institutes involved there some, but not all of Professor Woolhouse's concerns about the company's terms of reference.

Professor Peter Day, director of the Plant Breeding Institute near the company's Cambridge headquarters said there was no doubt the Agricultural Genetics Company's exclusive rights made it awkward for its establishment to make contact with other companies. However, he felt that in plant breeding, six months' wait for a decision was not a problem because applying biotechnology to plants was a project with long timescales.

Professor Day disagreed with another criticism made by Professor Woolhouse, who believes the company should have its own laboratories, like Celtech. However, he had some

fears about the growth of commercial confidentiality implied by tie with the company. "The science is only going to grow rapidly if there is free exchange of information," he said.

Dr Derek Rudd-Jones, director of the Glasshouse Crops Research Institute, agreed that exclusivity and the time taken to adopt a new production might be a problem, but he felt the institute needed professional advice on its commercial dealings, and the company could provide it. However, he was disappointed that "some of the major companies which are going to exploit our work are not represented as investors."

De La Salle sees merger as lifeline

The latest hope of a lifeline for De La Salle College, Manchester, was identified this week as a merger with the Bolton Institute of Higher Education. Governors of De La Salle, having learned of the reprieve granted by the National Advisory Body, agreed to pursue talks with Salford College of Technology, setting up working parties between the two institutions. But Bolton is waiting in the wings in case the talks should fail, or the proposal prove unacceptable to the NAB.

The new plan has been raised with both the North Western Regional Advisory Council and the NAB, but has still to be worked out in detail. The RAC, which is chaired by Councillor David Dingwall, chairman of Bolton education committee, continues to favour amalgamation with Salford but the NAB may feel that the institute is a more suitable partner.

Talks were being arranged this week between the Bolton and Salford authorities to discuss the alternatives. Mr Dingwall said: "We do not want this to become a competition. The RAC felt Salford was nearer to favoured it, but both proposals are in the pipeline."

"We are going to have to move quickly because we are determined not to lose De La Salle. At the end of the day, these things are moving southwards and we need to be able to support industry if we are going to keep it here."

The NAB committee rejected advice from its board to withdraw approval from the remaining advanced courses at De La Salle after appeals from the new Voluntary Sector Consultative Council to allow merger discussions to continue.



"I WAS WONDERING IF YOU COULD HELP ME OUT A BIT WITH THIS PASSAGE HERE..."

Glasgow University is putting in a bid as Britain's institution with the most international flavour. Now even the coffee machines speak three languages.

The university's new language centre, due to open next year, has been given a drinks machine which tells students if they insert the wrong coins, lets them know the drink's on its way, and exhorts them to enjoy it in three languages.

The centre hopes that the Kib machine, which speaks English, French and German, may eventually include Italian, Spanish and Russian. But in that case, staff would like the drinks selection to extend to language section - at the moment, the machines insist on saying everything three times.

Meanwhile more vending machines could be the answer to a storm over a teacup in the arts faculty. A report last season claimed that professionalism was being undermined by forced secretarial economies. "It is absurd that the heads of departments of Italian and religious studies should be making the tea," it added.

A secretary in sociology has written to the university's newsletter. She does not recall that tea-making was taught at her secretarial college, and she asks: "Perhaps the university could provide dry release courses for those of us who missed out on this skill."

The change has already been supported by the Essex further education subcommittee and is likely to be ratified by the full education committee next week.



Judge delays jail decision

by David Jobbins

A judge this week ordered the director of North London Polytechnic to supply information which could lead to two of his students being jailed.

Mr Justice Webster issued his directive to Dr David McDowall after adjourning a committal application by lawyers representing National Front student organiser Mr Patrick Harrington. The application was against six people alleged to have defied a court order by taking part in demonstrations against Mr Harrington's attendance at the polytechnic.

He said that Dr McDowall had until Monday to produce evidence on the extent and manner of the circulation of the original court order allowing Mr Harrington free access to continue his studies, and to support a claim by Mr Harrington's solicitor that members of the polytechnic directorate had identified the two polytechnic students at last month's demonstrations. Otherwise he would have to show why he should not do so.

In court the two students, Mr Steven Tasane and Mr John Letham, told the judge that they had known of the court order and admitted that they had been present at the illegal pickets. Neither was legally represented, and the judge said he was not prepared to rely on their admissions or waivers of rights in such circumstances, although there had "on the face of it" been a breach.

In the absence of evidence from Mr Harrington's lawyers that the two had seen and understood the order, and been present at last month's demonstrations, he adjourned the case without fixing a date for its resumption. He



Mr Tasane (left) and Mr Letham: will continue to demonstrate

ruled that the evidence produced by Mr Harrington's counsel, Mr Michael Butterfield, was hearsay and therefore inadmissible in a case in which he might have to send someone to prison.

Both Mr Tasane and Mr Letham told the judge they would continue to demonstrate against Mr Harrington's presence at the polytechnic. Mr Tasane, who asked to continue with the case, was cheered by supporters gathered in the tiny court when he said: "I can guarantee to you that if we walk out of here today we will be on the picket on Friday morning."

"Yes, I see," the judge said, before advising the two to take legal advice before taking any such action. Later he added: "Mr Tasane obviously wants to make a martyr of himself."

Mr Letham told the judge: "I will not be able to stop opposing Patrick Harrington or any other fascist or Nazi. We in the Polytechnic of North Lon-

don are opposing the ideology of the sewer and we intend to ensure that Mr Harrington remains in the sewer. I fully intend to be there on Friday and at any other subsequent demonstrations at PNL until we achieve our objective of no Nazis on campus."

Four others, none of them from the polytechnic, were also named in the application for committal. Mr Phillip Colterton, a saboteur officer at the Polytechnic of Central London, apologized in a written statement to the court, explaining that he had not realized the court order applied to others apart from PNL students.

The other three, Mr Robin Barnett, Mr Daniel Budzak, and Mr Russell Davis, a student at Middlesex Polytechnic, have to await the resumption of the case before they learn their fate. They, Mr Colterton and Mr Tasane are due to appear at Highbury magistrates court on Wednesday.

France proposes joint research channels

by David Dickson

University scientists who fail to discover a British company interested in exploiting their research results may find such interest coming from the other side of the Channel under a scheme which has been proposed by President Francois Mitterrand of France.

In his address two weeks ago to the British parliament, President Mitterrand suggested that the governments of France and Britain should jointly establish a new organization aimed at increasing the knowledge and awareness of scientists and industrialists about research being carried out in each country.

Although the ideas have been under consideration in Paris for some time, final details of how such an organization might operate are still being worked out, and the proposal has yet to be formally presented to the British government.

However it was inserted briefly in outline by President Mitterrand in a speech delivered to parliament during his recent official state visit to Britain. Commenting on Mrs Margaret Thatcher's interest in stimulating greater scientific and technological innovation in industry, he suggested that some form of foundation should be established to stimulate greater collaboration between industry and university research in the two countries.

At the same time, the British government, before giving its approval to the scheme, is expected to demand assurances that adequate precautions are taken to avoid French companies making excessive use of British research without British industry benefitting comparably from French science.

The new organization might establish committees in specific areas - robotics and the agricultural applications of genetic engineering are two possible examples - which would investigate ways of achieving a broader exchange of information.

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In particular M. Mitterrand claimed that the organization should be able to bring together individuals working in private and public research centres, universities and major scientific institutions, and perhaps eventually help to promote joint projects.

President Mitterrand's proposals are in line with the French government's recent pronouncement about the need to promote greater collaboration in science and technology between different European countries if they were to remain competitive in international markets with the United States and Japan.

France has already created so-called "research associations" with two other European countries - West Germany and Sweden - which organize seminars and conferences on specific topics.

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ILEA may cut £1m off youth scheme budget

by Patricia Santinelli

The Inner London Education Authority is planning to cut its further education colleges' financial provision for the Youth Training Scheme from £2.5m to £1.5m next year.

A decision on the cut is expected to be made this month by the authority's subcommittees as part of the current consultation process on the 1985/86 budget.

The ILEA has some 200 individual YTS schemes using further education colleges for off the job training. Some 75 per cent of its 5,000 students are on Mode A (employer run) schemes and the rest on Mode B1 (community and training workshops) and Mode B2

(college run) places.

The authority says that the cut should not affect colleges adversely because the £2.5m set aside this year included a substantial amount for development work and was based on a YTS student intake of 10,000.

It argues that funding for such development is no longer necessary because colleges are now familiar with YTS work. Moreover should there be an increase in YTS numbers, colleges could accommodate it without disruption or financial problems.

In addition, ILEA points out that the level of fees has now been raised by some 30 per cent to a base rate of £18, and that problems with the Construc-

tion Industry Training Board have been solved through a deal whereby the board pays the normal rate for 13 weeks off the job training, but then gets a concessionary rate for any further week's training thereafter.

But in a report presented to ILEA's 16-19 review subcommittee, the authority admits that YTS imposes considerable resource demands upon colleges. Full recovery of costs is not possible.

The authority has however made provision in its draft 1985/86 budget for some new courses as a follow up to YTS, pending a decision by the MSC as to whether the scheme should be expanded to two years.

Exam bias in medics choice

School exam performance is still the only guarantee of a chance of entering medical school, according to a survey of applicants to St Mary's Hospital Medical School in London.

Although A level grades are widely recognized as poor indicators of subsequent performance at medical school, they remain a much better predictor of selection for entry than other factors proposed as relevant to choice of future doctors, including personality and attitudes, the survey shows.

Professor Peter Richards, the dean of St Mary's, and Dr Chris McManus, a lecturer in psychology, surveyed over 1,000 applicants to the school in 1980, of whom just over one third were admitted to St Mary's or another medical school.

In a paper published in this week's *British Medical Journal*, they say they ran the survey in response to criticism from doctors, students and the press about the way around 3,000 prospective doctors are chosen each year from over 10,000 applicants to Britain's medical schools.

The results show that A level achievement was the main influence on acceptance, but O level scores, medical parents were also helpful. They could not find any effects of social class, age, sex or type of school. However, they believe some of these background factors confer an indirect advantage.

The authors say the influence of a medical parent is important because it undermines confidence in the fairness of the system. They find the influence of O level scores worrying as they are such a poor indicator of later work.

Jobless scheme nearly filled

Ninety-five per cent of places on a work programme for the long-term unemployed have been filled, according to figures published by the Manpower Services Commission. By the end of September the community programme had placed 123,341 people, out of a target number of 130,000.

Places on the scheme are available to adults aged 16 to 24 who have been out of work for six months of a nine-month period, and to those aged 25 and above who have been unemployed for 12 months out of a 15-month span.

Warwick launches academic acclimatization scheme

A bridging programme designed to academically acclimatize foreign students wishing to enter British higher education is to be launched next year by Warwick University.

A substantial part of the programme will be based on Open University foundation courses, which Warwick hopes will aid its recognition nationally as a higher education pre-entry qualification.

The university is also seeking to establish a two-way flow of information with other higher education institutions which may be interested.

pre-entry programme before they begin their undergraduate studies.

A pilot scheme run at Warwick this year involved 41 foreign students, mainly from Malaysia and Cyprus. All went on to obtain places on degree courses at institutions in Britain.

The programme is designed for foreign students for whom English is a second language, or who may have obtained their previous qualifications in another language. Some may not have achieved the necessary A level grades to qualify for places, others may possess qualifications not normally acceptable in Britain.

All students will be given a diagnostic test in English at the start of the programme, and will then follow an English language course designed to meet their individual needs.

Each student will undertake an OU foundation course, which will be taught face to face rather than by distance learning techniques. Where necessary students will also be able to supplement their existing qualifications with additional O level studies.

The programme has been arranged by Warwick University through its consortium link with Coventry Polytechnic and further education col-

leges in the West Midlands. Staff from these institutions will be teaching on the programme, with the OU components being assessed externally by OU academics.

Warwick has just embarked on the second year of the pilot project. Next year will mark the official start of the scheme, with the introduction of the OU foundation course material into the teaching programme. Initially the university expects to attract about 100 students to the scheme, but eventually it hopes to cater for between 300 and 400 annually.

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For my money, magazines about exertion and effort are a darn sight better than physical activity itself. According to *Who's Who* my leisure activities of DIY, but Practical Gardening, and *Do-It-Yourself* World suit me much better.

Looking for a recreational magazine these days is a full-time leisure pursuit in itself. In my local Smith's, the leisure magazines are decidedly wanting the battle of the shelves. Glancing through the magazine racks is one of the free perks of the perpetual rail travel of MP's and leisure magazines are now an essential part of my education. Most, though, seem to be designed and written for the recreational voyager. One can drool over the "captivating" and hi-fi at a mere £500 in *New Hi-Fi World*, dream about a glamorous boat in *Yachting*, or those wonderful flower beds in *Gardening World*. It is not really the world of gardening or hi-fi that is on offer, but a complete fantasy world.

Ditto the cinema. The hero is

PARTY LINE

The world of the DIY fantasy

back - just as Ronald Reagan is on his way to the White House. Is it all part of the same phenomenon? The magazine, the television and the movies, like Ronald Reagan, make people feel good. Mr Mondale on the other hand is not only boring, he is, say the pundits, "too cerebral". We are living increasingly in a world of illusion and we are doing precious little to educate people to appreciate and discriminate. Even most of our newspapers rarely live up to their name these days: they give us more bluffs and bores than news.

There is nothing wrong with escapism, fantasy or daydreaming, but are we doing enough to help people have a great sense of awareness and the desire to pursue more

concrete leisure pursuits? Imagining the big pools can be a pretty arid past-time. Possibly education has more of a role to play. Fifty per cent of adults say they would like to take a course in something, though only a fraction ever do. And the higher and further education system is still not geared to giving them much help. Yet investing in oneself is going to make more and more sense. And should our schools seek to widen our ability to find something satisfying as well as useful to do? Sir Keith Joseph is soon to issue a Her Majesty's Inspectorate report on what primary schools should be teaching, to follow up the recent paper emphasizing the importance of basic grammar and spelling.

The straight truth is that we do not always do a very good job - and

sometimes we are not even certain what that job should be. Whether we like it or not, education is being redefined fast. One of the dangers is the temptation to retreat into a siege mentality and adopt a narrow, even selfish, posture that opposes experimentation. We could well be at a more critical point than many realize.

Finally, an appeal to my readers. Everybody in the academic world must wake up to the fact that the application of Value Added Tax to a wide range of literature is under very serious examination in the Treasury. Now is the time for action. Vigorous opposition needs to be directed to local MPs, above all to those in my party. Politicians do not like trouble. And it is amazing how one issue causes an MP's antennae to twitch. Don't mean, writer.

Keith Hampson

The author is Conservative MP for Leeds North-West.

Adults 'need more mature treatment'

by Maggie Richards

A call for new strategies to make education more meaningful for adult students is made today in a report on provision for the unemployed.

In too many cases, mature students are expected to slot into courses aimed at 18-year-olds, and to tackle exams designed for 15 and 16-year-olds, says the report by a former member of Her Majesty's Inspectorate.

Commissioned by the Department of Education and Science, the report, by Mrs Joan McDonald, looks at present educational opportunities for the unemployed, identifies problem areas and attempts to focus on examples of good practice.

Publication of the report today coincides with the launch of a series of conferences by the DES to herald the arrival of Re-Plan, the Retraining and Education Programme for the Long-Term Adult Non-earning.

Initially, the DES is putting £2.5m into the programme over three years with the aim of instigating a number of experimental projects involving improved educational opportunities for jobless people. To coordinate the

programme, a new Re-Plan unit has been created and seven regional field officers are being appointed.

The new report spotlights three major factors preventing jobless adults from using educational facilities: ignorance of provision; feelings of isolation; and deep rooted suspicion of the system.

Practical problems, such as the payment of fees and ongoing expenses, also impede entry, as do widely differing interpretations of the 21-hour rule under which the unemployed may study and obtain social security benefits.

The report acknowledges the extensive cooperation which already exists between educational institutions and the Manpower Services Commission. "Some criticism made of the MSC seems to be misdirected in that adult education staff do not always familiarize themselves with the parameters within which the MSC works and are then aggrieved when projects are rejected because they fall outside MSC's clearly defined funding role. Nevertheless, it would be unreal not to recognize that there are often differ-

ences in deciding where precisely the line between education and training should be drawn," it says.

"Despite the MSC's insistence on its training role, many MSC courses, particularly those at preparatory level, operate within a broadly based and liberal framework."

Conventional patterns of provision are also being broken down by the unemployed themselves, who do not always distinguish between vocational and non-vocational sectors, and make use of a variety of facilities for their own ends.

But the attempt to accommodate mature unemployed students in the existing educational framework has highlighted its inadequacies and irrelevance for many of them. Educational strategies more closely related to adult experience and the whole concept of continuing education are now needed.

While some unemployed students can cope with O level examinations, the report questions whether an examination devised for 15 and 16-year-olds is the most appropriate way of establishing adult ability and potential.

Britain lags behind other countries, notably the United States of America in failing to recognize the wholly different experience and learning pattern of adults.

As a cross-section of society, with a preponderance of disadvantaged people, the unemployed represent a new challenge to the education system. The unemployed themselves must be involved in developing education programmes, and they must be offered a variety of choice and opportunities on as broad a base as possible, the report urges.

"On the one hand they should be helped to develop and structure their own programmes; on the other, the full wealth of educational resources should be made more accessible to them and where necessary they should be helped to choose and become more independent."

Education for Unemployed Adults: Problems and good practice, a paper by Joan McDonald. Copies from the DES, publications despatch centre, Honeypot Lane, Stanmore, Middx. HA7 1AZ.



Back to the drawing board

The National Advisory Body is in a mess over art and design. Early last week, the NAB committee threw back at the board proposals to close or transfer a number of courses. The politicians on the committee decided they didn't like the planning criteria that the board had taken into months to develop and implement; and told them to think again. The National Association of Teachers in Further and Higher Education welcomes that decision. What was being proposed included closure of so-called "isolated" courses and a number of reviews in various parts of the country with no discernible rationale.

How did the NAB get into this mess? It embarked on a review of art and design provision, especially DATEC courses, last December. Most of the detailed work was delegated to its art and design group, which meets in secret. The board has only debated the review twice since then. In April it agreed the criteria including the notorious "isolated courses" factor.

In July it should have discussed a further report, but it was deferred until September. By then colleges on the art and design group's hit list had been consulted, many of them with little more than a month to respond, and the closure list had been drawn up. At no time were there any public discussions on the proposals or on the publication of the board's criteria.

This secrecy has been extremely damaging. First it is bad planning. Academic boards, Natfhe branches, local authorities and regional advisory committees actually do know something about art and design, and their knowledge could have informed the planning process, had they been given a choice. Second, with no published timetable no one knew what was going to happen or when. Third, the NAB is a public body, advising on the use of public money. It is as damaging to its credibility as it is as damaging to morale in art and design education for policies to be developed in secret.

For the NAB has a special responsibility in the case of art and design. Virtually the whole of the provision is in the public sector. Furthermore, it is an area of education which has an international reputation - it is a major national asset. The board must recognize this and act with a greater sense of responsibility.

There is currently considerable public interest in art and design education, and several initiatives have been taken recently. The Hayes report *The Industrial Design Requirements of Industry*, the DES sponsored "Young Blood" and "Germinalious" exhibitions, the Design Council's strategy group, the Government's Design Strategy, the forthcoming Council for National Academic Awards review of art courses, the Business and Technician Education Council's "Design for Experience" conferences, the CNA's Design for Management Initiatives - all are evidence of this interest. None of them has ever been discussed by the board!

There must be a public debate about such issues. The NAB committee has given the board a chance to organize it. It must publish a proposed art and design strategy, and allow all interested parties to take part in the debate.

Natfhe takes art and design seriously - it is time the board did too!

Michael Farmer

The author is chairman of Natfhe's art and design standing committee.

Chilver pledges market rates for IT teachers

by Jon Turney
Science Correspondent

Two-tier salary scales for information technology teachers are on the cards if the private Information Technology Institute promoted by Sir Henry Chilver gets off the ground next year.

Sir Henry said last week that staff for the new institute, including the principal and managing director, would be paid the market rate for their field. And he indicated that most were likely to come from industry, on salaries matching those paid to information technologists in the private sector.

Aside from this, and the emphasis that the non-undergraduate side of the prospective institute in Milton Keynes will be run on strictly business lines, Sir Henry's plans are very similar to those

drawn up by Professor John Ashworth for a Salford-based Information Technology Institute uniting the resources of the university and the National Computing Centre.

One year conversion courses, which might begin next year, would be the main contribution from either institution to reducing current staff shortages. Delays in Salford's discussions with the Government mean they could not start undergraduate courses until 1986, matching the plans of Sir Henry's group.

Salford's proposals stress their courses would be designed for students without A levels in maths and science

subjects, using computer-assisted teaching to bring them up to scratch, and will only cater for British students. Sir Henry said his institute would mainly work with companies operating in this country, although he is also talking to some overseas concerns.

Sir Henry expects a founder group of companies to be announced soon, putting up the £10m to £15m needed, and his group is looking at the possibility of a foundation to fund the institute more tax-efficiently for the donors. He expects the Government to pay for most of the undergraduate training, and points to the possibility of short-term contracts for undergraduate teaching. Degrees from the Milton Keynes institute would be validated by the Cranfield Institute of Technology, where Sir Henry is vice chancellor.

The educational philosophy of the two schemes is also similar, although Sir Henry said the nine-term undergraduate course he proposed could well take less than three years. Both sets of plans stress a broad introduction to information technology.

Salford estimates the north-west establishment will need 117 academic staff to cater for 1,000 undergraduate and 250 postgraduate students. Those would be drawn from existing university departments, new university staff on long and short-term contracts, and secondments from industrial partners and the National Computing Centre.

Computer choice criticized

by Patricia Santinelli

Buckinghamshire College of Higher Education's choice of computer system is criticized by Her Majesty's Inspectorate this week as inadequate but the institution is praised for having made a good start in providing and using computing facilities.

The HMI report, based on an inspection of the college's computing facilities last November, says that the ICL ME 29 central computer system installed in 1981 has proved difficult, according to the original specifications.

It says: "There is little use of the ICL ME 29 except in teaching programming and staff of all schools and colleges are having severe limitations in availability, facilities, software and speed of response. Much of the good work observed was based on micro-computers."

It adds that although the level of computing activity across the college was not high, there was some activity in all schools and good use in several areas, especially management studies. The HMI recommends that the college should urgently develop a computing policy based on an educational specification of the computer requirements which should include resource implications such as staffing, equipment, software, accommodation and other finance.

It also wants to develop and implement a coordinated plan for staff members, a number of staff have no computing knowledge at all - in information technology and computer use.

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Bristol's most palatial evening class: Bishop of Bath and Wells the Rt Rev John Bickersteth (left) at an evening class in his palace dining room run by Bristol Polytechnic lecturer Malcolm Drake.

The Bishop asked Mr Drake to run a class at the palace in calligraphy after seeing him demonstrate the craft at an exhibition. From beginners, including a doctor and an ex-policeman, they have moved on to more sophisticated work around the palace dining room table and acquired a name: *The Palace Scribes*. There is a 40-strong waiting list, and plans to study ancient manuscripts in the cathedral library.

Projects agreed as training programme gets under way

A dozen projects have now been agreed between the Department of Education and Science and the Manpower Services Commission under the £1.35m local collaborative programme pilot announced earlier this year.

Originally part of the MSC's Adult Training Strategy which has still to be agreed by the commission, the programme brings together universities, polytechnics and colleges together with skillcentres and companies to identify training needs.

Seven new projects, which will receive £300,000 over the next year, have been clinched in addition to 30 smaller schemes which will develop existing collaboration.

The burgeoning biotech industry in the south-east of England has prompted all educational sectors to pinpoint needs. Durham and Newcastle universities with Sunderland, Newcastle and Teesside polytechnics and five firms, including ICI and Unilever, are joining forces to meet the major impact of

biotech expected in the 1990s.

The National Coal Board and Merton Mowbray College of Further Education are to work together on a survey to assess the impact of the new Vale of Belvoir coalfield on jobs and work training.

The use of cable television as a medium for training is to be investigated by a consortium including the University of Surrey, Guildford County College of Technology and Rediffusion.

The new technology training needs of 8,500 adults is to be explored in North Oxfordshire in another scheme. White five colleges in Northamptonshire are setting up a computer-based service on training opportunities for local staff.

The NAS/UWT adds, too, that it does not share the view of those who assert that there

overseas news

Germans to consider law revision

from Barbara Von Ow

MUNICH

A draft amendment of the West German university law, proposing changes in the personnel structure and voting system of German higher education, has been submitted by the federal education ministry in Bonn. The draft, based on a report drawn up by an expert commission earlier this year, is expected to be passed by the cabinet next month and taken up by parliament in early 1985.

However, it will depend on the approval by the regional Lander governments whether the changes, which have been given a mixed reception by the German press, will be instituted.

The Bonn government has made clear it does not seek a total revision of the university law, which was introduced in 1976 as a federal framework for greater unity among the Lander. Rather it plans a set of "moderate amendments" aimed at boosting the autonomy and competitiveness of German universities. This complies with the opinion of most politicians and academic bodies that a radical reform would only create protracted unrest in West Germany's higher education system.

The government draft does not change the present structure and hierarchy at German universities. However it abolishes the concept of comprehensive universities as the sole binding organizational model. Although upholding the principle of "group university", under which professors, students, academic and non-academic assistants have an equal say



Dorothee Wilms: last resort

in most decision making panels, the draft would boost professorial votes on certain levels.

Universities would be given a free choice of whether to elect a rector, a president who would not necessarily belong to the university, or a collective presidium. However, professors would again be given the absolute majority in the panel electing the head of university. Would-be rectors or presidents would need not only a majority of their panel but an overall majority of the professors represented, an amendment which could significantly change the balance of power in certain universities.

Faculties would continue to be the basic unit of German universities. However, in a move designed to create more coherence among the different faculties, the deans, as faculty speak-

ers, would be given a seat and vote in the university senate, the central organ which decides on budget and structural changes. At the same time all faculty professors would be given a vote, and thereby an assured majority, in any new appointments and decisions concerning the habilitation and doctoral systems.

A series of other amendments aims at promoting so-called "elite" students. The draft would allow universities to establish special degree courses for which students would be admitted on the basis of a special qualification. Universities could determine the number of admissions to these courses irrespective of conventional capacity regulations. They could also offer special courses for highly talented students and relieve the latter of the usual mandatory lectures and seminars.

Degree courses would no longer need approval by the state authorities. They would continue to be limited to four years, but the government is not thinking of introducing sanctions for longer studies. However it would make interim exams binding for all courses. Postgraduate courses would only be open to qualified candidates and limited to a maximum of two years.

The draft upholds the present three categories of professorships, ignoring the proposals of the expert commission, which had advised to scrap the lowest paid C2 category. However, in a move which appears to forego a division between teaching and research fellowships, professors could be

accorded certain, albeit limited, periods to concentrate mainly or exclusively on their research.

At the same time, the "university assistant" focusing solely on his academic qualification would be abolished, meaning a return to the "scientific assistant" dividing his time between own academic work and administrative duties.

Furthermore the new law would allow more room for so-called "third means", for example funds from universities. While certain to meet the approval of most scientific institutions, this amendment may face considerable opposition from a series of regional Lander.

According to the conservative newspaper *Die Welt*, however, the draft would nevertheless have good chances of passing the Lander parliament. In its assessment, the newspaper even accused the government of not going far enough in its reforms by not tackling the financing of higher education. It quoted federal education minister Dorothee Wilms as telling a meeting of managers that as a last resort she would not hesitate to introduce student fees.

In contrast, the left-leaning magazine *Der Spiegel* said the minister's bill would nevertheless be within her own ranks. The new law would mean a restoration of the old hierarchical "Ordinaren University," *Der Spiegel* said, quoting a regional social democratic science minister as saying: "In stead of money there is to be amendment. That will stir up unnecessary conflict."

Officials at Bates College said the decision to drop the SAT as an admission requirement was made largely because of study results which show the test to be an unreliable indicator of a student's academic potential.

In addition, the colleges faculty and administration were concerned that the growing number of commercial courses which help students prepare for the test give an unfair advantage to those students who can afford such "coaching".

Prior to making their decision, Bates College conducted four separate studies to evaluate the possible impact of their decision, and The College Board has given the college a \$10,000 grant to continue their research.

In one of the studies, conducted in 1980, the academic records of 372 randomly selected students were examined, and the results showed that other admission criteria, such as class rank, grades and courses, were more valuable than SAT scores in predicting how well those students performed in their subsequent academic work.

The final study, conducted last summer, which examined the records of students who dropped out of Bates College for academic reasons, concluded that SAT scores provided no additional contribution.

Bowdoin college in Brunswick, Maine, was the first major college to make the submission of SAT scores optional. The college recently conducted a study of its own to determine any possible negative effects stemming from its 1969 decision.

The study examined the academic records of students enrolled at Bowdoin between 1970 and 1982, and found no statistically significant differences between the four-year grade point averages of those students who had chosen to submit their SAT scores and those who had not.

Despite the move by some colleges and universities to eliminate the SAT admission requirement, the number of institutions using the SAT has increased, from 1,183 in 1977 to 1,562 last year, and according to a 1977 college board student survey, a 46 per cent plurality thought it would be a bad idea to eliminate the SAT altogether.

US colleges reexamine test policy

A number of American colleges and universities are reexamining their policy of using Scholastic Aptitude test scores to determine which students are academically suited for admission to their institutions.

Bates College of Lewiston, Maine, recently joined several other institutions, including the University of Wisconsin and Sarah Lawrence College in Bronxville, NY, in making the SAT an optional requirement for admission and a growing number of schools, including Harvard University, are currently considering making the same move.

Critics of the standardized test, which is taken annually by over one million prospective college students, have maintained that the SAT is a dubious predictor of future college performance, and that the test's importance has become overblown in the minds of parents and students alike. Others claim the widely-used test discourages applications from minority and economically disadvantaged students.

The SAT, which tests verbal and mathematics skills, is sponsored by The College Board and administered by the Educational Testing Service of Princeton, New Jersey. About a quarter of the college-bound students who voluntarily take the test also take three achievement tests offered in specific subjects, such as biology and computer science.

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The number of academic posts had actually stagnated since 1975 while the number of student beginners had more than doubled every year, the scientists said. Because of the young average age of the large number of professors employed during the expansive 1960s and 1970s, the chances of young scientists for a professorship would look

already paid over £100. They claim that Mr Diamond, the principal of the college, discovered that the college telephone had been used to make long distance calls to Penang, Malaysia. As there were four students from Penang in the college he simply forced them to pay the cost, or to be reported to the authorities.

The students said they were bitter about having to find their own accommodation in Canada when they had previously paid over £100 to Taylor's College in Kuala Lumpur as accom-

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Australia suffers squeeze on places

from Geoff Maslen

MELBOURNE
Thousands of young Australians will miss out on places in higher education institutions in 1985 - the fourth consecutive year for some in which qualified students have been turned away from further study.

Estimates suggest that in Victoria alone, more than 5,000 qualified school-leavers will not be admitted to universities and colleges of advanced education. The actual number to miss out on a place will be much higher. This year in Victoria, for example, there were almost 40,000 applications for 24,500 places in tertiary institutions.

Since 1982, there has been a startling increase in the demand for university and college courses across Australia. Today, most higher education institutions have more students than the Commonwealth Tertiary Education Commission is paying them for, and there are fears the pressure on places will make this situation worse next year.

For instance, colleges of advanced education in 1983 had 5 per cent more students than planned and this year's numbers are more than 6 per cent above those set for the 1982/84 session.

In its first budget last year, the Hawke government provided an extra \$10m to create 3,000 new places in higher education. That amounted to \$3,300 a student, whereas the actual cost of educating a tertiary student is now, on average, more than \$6,000, so that institutions have been expected to cope with what the commonwealth calls "marginal cost funding".

In the event, the nationwide intake was 3,900 this year, leaving some funding was available. Many colleges and universities are now in this situation and it came about for two reasons: fewer new students than anticipated declined the offer of a place, and more students than expected continued with their studies.

This year's federal budget provides for a net increase in intake of 1,300 for 1985. This is quite inadequate to meet the demand, or what is expected to be the sharply increasing demand for places. At the University of Queensland, for example, there will be no federal funding for new students, extra

Germans want 'new blood'

from Barbara Von Ow

MUNICH
At least 200 new professional posts should be created annually at West German universities until the end of this decade to ensure the competitiveness of German research, the chiefs of the country's six leading academic organizations have urged.

In a memorandum to the Bonn and Lander governments, the president and chairman of the Max Planck Society, the rector's conference, the Academic Council and the German Research Association, the association of big research institutes and the Prussian Society warned that the long-term effects of the rapid expansion of West German universities

The number of academic posts had actually stagnated since 1975 while the number of student beginners had more than doubled every year, the scientists said. Because of the young average age of the large number of professors employed during the expansive 1960s and 1970s, the chances of young scientists for a professorship would look

Malaysian students claim victimization

by Geoffrey Parkins

A number of Malaysian students studying in Canada have accused staff at the Cambridge International College, Toronto, of victimization and discrimination.

The students alleged that they were forced to speak in their native language, forced to pay almost \$2,000 for tuition fees to Malaysia, which they never made, and were not provided with living or sleeping accommodation for which they had

already paid over £100. They claim that Mr Diamond, the principal of the college, discovered that the college telephone had been used to make long distance calls to Penang, Malaysia. As there were four students from Penang in the college he simply forced them to pay the cost, or to be reported to the authorities.

The students said they were bitter about having to find their own accommodation in Canada when they had previously paid over £100 to Taylor's College in Kuala Lumpur as accom-

modation for which they had

overseas news

French women flood to university

from Craig Charney

PARIS

French women have made major advances in higher education over the past decade, according to a new study.

The report, prepared by the statistical service of the French Ministry of Education, shows that more women than ever before are entering universities at all levels, though there are fewer women than men in postgraduate studies and teaching appointments.

The most striking finding was the sharp rise in the proportion of women enrolled in professional degree courses. In law, for example a majority (54 per cent) of students enrolled in 1982 were women, against 39 per cent in 1974.

The proportion of women medical students rose from 32 per cent to 45 per

cent over the same period. There was also a big increase in the proportion of women studying economics, with smaller rises in polytechnics and business, dental and engineering schools. Sciences was the only discipline in which the proportion of women did not increase, where it held steady at 36 per cent.

Nevertheless, the study found that young women still choose arts degrees more frequently than young men. In 1982, they were more predominant than before among students in the humanities (71 per cent) and pharmacy (64 per cent).

The increased female enrolment appears linked in part to the growth in the proportion of women passing the *baccalaureat*, the French equivalent of A levels. The proportion of women among successful candidates for the

BAC rose from 50 per cent in 1968 to 60 per cent in 1983.

Gains for women were also noted in postgraduate enrolment, though the statistics show that there is still a rapid fall off in the number of women in the higher echelon of the French educational system. Female postgraduates were commonest in the humanities, but even there formed only 48 per cent of the total. In law, business, economics, and dentistry they made up between 25 and 35 per cent of postgraduates.

The gap between men and women remained greatest at the level of university teachers. The Education Ministry of Education figures show that women made up 30 per cent of *Maitre-assistants*, roughly equivalent to British lecturers, and only 9 per cent of professors.

Gays take college to court

Gay activists at Georgetown University in Washington have taken it to court in an attempt to gain official recognition of their student organizations.

The gay students, along with 14 members of the Georgetown University law faculty and the local government of Washington, are seeking to overturn a superior court ruling which states that the United States constitutional right to free exercise of religion entitles the university to deny recognition and privileges to the student groups.

Georgetown University, an affiliate of the Catholic church, maintains that university recognition of the groups would be tantamount to an official university endorsement of homosexuality, which Roman Catholic religious doctrine deprecates as morally wrong.

Lawyers for the gay student organizations have invoked a 1977 local law

which bars discrimination on the ground of sexual orientation. They claim that in addition to denying the organizations equal opportunity to apply for office space and other campus amenities, the university's denial of recognition has "stigmatized and humiliated" gay students.

The homosexual students have stated that the university is primarily secular, and by accepting federal money for construction on the condition that the buildings would not be used for sectarian purposes, the university has forfeited the right to discriminate against them on religious grounds.

Lawyers for the university maintain that Georgetown does not discriminate against homosexuals in admission or employment, and the groups are free to hold on-campus meetings and to advertise in university publications.



Tea addicts forced to go unrefreshed

The West has no monopoly on students' complaints on the adequacy of their grants, as recent correspondence in a Soviet provincial newspaper testifies.

It seems that students in Frunze, the capital of Soviet Kirgizia, are finding it virtually impossible to obtain a glass of tea in college canteens. Writing in the local newspaper, *Sovetskaya Kirgizia*, a student from Frunze Polytechnic complained that at the University of Frunze, the polytechnic, the school of choreography and other colleges the canteens provided only coffee.

Coffee, however, cost 20 kopeks (about 20p) a glass. And the writer complains that on his grant of 40 roubles (about £40) a month he simply cannot afford the glasses he needs to refresh himself between classes.

Whether the same situation applies to lecturers' canteens is not clear. On their salaries of 300 to 400 rubles per month, however, the lecturers are presumably well able to afford it.

Ironically, the complaint appeared only a few days before a leading Moscow weekly, *Literaturnaya Gazeta*, published a lengthy article by an expert from Azerbaijan in the Soviet tea-growing belt, urging that Soviet citizens should be encouraged to drink more tea. It is claimed that tea drinkers are less prone to fall victim to alcoholism, the curse of Soviet life.

The Fiebigler scheme had also suggested that additional professorships, to be abolished 10 or 15 years later, should continue to be created in order to preserve employment chances for young scientists. Although welcomed by most academic organizations, the scheme has so far failed to be taken up by the Bonn government.

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TV project set up in Mexico

from Emil Zubryn

CUERNAVACA

The National University of Mexico (UNAM) is to be set up its own television company to create integral education programmes, as well as extracurricular, cultural and social interest material.

Dr Jorge Hernandez y Hernandez, director of UNAM communications, said the new television system will draw on its own resources—personnel and financing—in developing programming destined to "conserve" national and university values.

The university television project, TV UNAM, will cover all aspects from writing, directing, acting, lecturing on special themes, etc. Both closed circuit and a general television channel will be used to broadcast the programme.

It is hoped that this entry into use of television will be a substantial aid in university and government goals to expand educational tanks, as outlined in the recent university reform programme. Long term aims hope to improve educational and cultural levels of the public, apart from offering extracurricular telecasts for university students.

In the past the government-owned media and television facilities have been used for educational purposes, but on a rather loose basis. Also, a good deal of the programming was mainly of political nature.

Now, according to Dr Hernandez, UNAM will produce, programme and disseminate a broad range of non-trivial television material.

A major part of the TV UNAM project is that it will foment research on television techniques, and maintain continuous surveys of results obtained by university television facilities. The medium has been and is used in other regional universities in collaboration with existing Mexican television channels.

UNAM also plans to train people for practical work in all television mediums, including technical.

The university also will work with established open channels, negotiating agreements for coproductions, with these to be released through commercial stations.

Finally, the university project plans to create a central TV unit to coordinate production, post-production and copies of programmes to be retelecast at spaced intervals. There is also a plan to release the Mexican programme to educational institutions throughout Latin America, after the system begins to function smoothly, Dr Hernandez said.

Efforts to recruit minorities urged

from Deborah Kasouf

WASHINGTON

Colleges and universities must make a greater effort to recruit and encourage talented minority students if true educational excellence is to be achieved in American higher education, according to education experts attending the annual Educational Testing Service in New York City.

"We need to remind educators that true educational excellence requires true educational equity as well," said ETS president Mr Gregory Anrig. "Excellence cannot be allowed to become the new code word for a retreat from equity, just when the struggles of recent years are beginning to pay off."

One of the most ignored facts in recent education reports, according to Mr Anrig, is that the recent improvement in scores on the Scholastic Aptitude Test, which is given annually to college-bound high school students, is

largely due to the improved performance of black and Hispanic students. Mr Anrig told the conference that minority students participation in demanding academic courses, such as mathematics and the physical sciences, has also increased dramatically, and that these improvements make minority students better prepared than in the past for this period of reform in higher education.

Mr James Blackwell, a University of Massachusetts sociology professor who specializes in the study of racial and ethnic minorities and higher education, told the conference that graduate and professional education is one critical area where minorities are being left behind.

Minorities are "vastly under-represented" in medical, dentistry, engineering and doctoral programs, according to Mr Blackwell, who urged colleges and universities to identify potential candidates for graduate and professional schools from among their

black undergraduate students.

Professors must become aware of the need for more minorities in higher education and those students with potential must be nurtured and encouraged throughout their college careers, he said. Schools must also take steps to accelerate the pace of minority recruitment and help more minority students transfer from community colleges of four-year institutions.

Mr Blackwell urged schools to grant more teaching and research assistance to black students, and to encourage black graduate students support themselves with such assistantships as compared to half of white graduate students.

According to Mr Blackwell's research, institutions with significant numbers of black faculty do a better job of recruiting, enrolling and graduating black students, and he recommended that more black faculty be hired by colleges and universities.

Thais launch student campaign

Student leaders in two of Thailand's leading universities are attempting to revive Thailand's activist student movement, which has been relatively quiet in recent years.

Their first move was to organize a student march to commemorate the eleventh anniversary of an uprising against the continuance of military rule in Thailand. The march was peaceful and the organisers were reported to be encouraged by the turnout.

The activists have now announced a campaign against what they describe as Japan's unfair trade dealings with Thailand. They intend to apply pressure on the authorities by demonstration and persuade Thais not to buy imported luxury goods from Japan, which they claim are a waste of money and cause trade deficits for the country.

The president of Bangkok's Thammasat University student union, Anucha Hongthong, said the campaign aimed to force Japan to narrow the trade gap. "We are at a great disadvantage with Japan because Japan is in a trade deficit with the huge trade deficit," last year, Thailand's trade deficit with Japan was almost \$1.5 billion. Just under half Thailand's total trade shortfall.

Row over Corsican freeze

from Craig Charney

PARIS

A row over academic freedom has erupted in Corsica, where far rightists in the regional assembly have won a politically inspired freeze on expansion funding for the university.

The move was spearheaded by Pascal Arrighi, Corsican leader of the extreme right National Front, which participated in a right wing coalition which recently gained control of the Mediterranean island's assembly.

Mr Arrighi termed the funding cut off a "protest against intellectual terrorism" at the university. However, press and academic observers regarded the action as a threat to free discussion at the university of Corsica.

For several years, Corsica has been the scene of political campaigns and sporadic violent attacks by groups who want its independence from France. In

response, the Association for a Republican French Corsica (CFR) has pressurized television stations, singing groups, and others seen as too favourable to the separatists.

Since the creation of the University of Corsica in 1981, it has been the site of heated intellectual confrontations between pro and anti independence factions, leading conservatives to see it as a "nest of nationalists". With the recent take over of the assembly by the followers of Mr Arrighi and Gaullist Jean Paul De Rocca Serra - the kingpins of the CFR, the stage was set for a clash.

The \$250,000 budget cut appeared to violate the spirit of the assembly's charter which gives it competence only in financial, not academic affairs. However the October 26 vote will not close the university, though it will halt the equipment of new laboratories.

Most of the universities had intended to delay their opening by two weeks while the government was expected to clarify its financial situation. At the intervention of the education minister, Yitzhak Navon, all but Ben-Gurion University abandoned this position and agreed to open, even though funding was being guaranteed only for their first trimester, because of

the entire school year before opening its doors.

Faculty members and administrative personnel have taken a six per cent pay cut and programmes have been cut back in an attempt to reduce deficits. Uncertainty about continuation of classes through the academic year has led many of the country's 50,000 students to seek lodging with friends or relatives instead of signing a one-year lease on apartments.

Israelis reach interim budget solution

from Steven Paul

JERUSALEM

Almost all Israel's institutions of higher learning began their academic year as scheduled at the end of last month after arriving at an interim solution with the government about their budgets.

The one exception was the Ben-Gurion University of the Negev in Beersheba which insisted on obtaining budgetary guarantees for its operation

Seventy-five years of self-help and expression

Felicity Jones visits the Swarthmore Education Centre whose voluntarism is under threat

Earnestness is the word to describe the first years of the Swarthmore Settlement in Leeds. A list of the first year's courses 75 years ago included "Child Life and Labour" and "Economics and Poor Law", while the warden reported on discussions held with a class of "most earnest young men at Lower Wortley for some two hours each night".

An hour was set aside at 6.15pm on Saturdays to discuss an event of the week and Saturday afternoon speakers would talk about such diverse topics as "The Romance of the Telephone" and "Some Characteristics of the Gospel Narratives".

In its anniversary year, Swarthmore Educational Centre, occupying a row of elegant but slightly down-at-heel early Victorian terraced houses surrounded by newly refurbished mills in the centre of town, may have lost some of that well-intentioned worthiness – the spur to so much early adult education. But it has remained true in some important respects to the principles of self-help and self-expression which underlay the founding of the centre.

Swarthmore Hall near Ulverston was the home of Judge Thomas Fell where George Fox stayed as itinerant preacher over 300 years ago and founded the religious Society of Friends. Out of the bible-study centred adult school movement of the Quakers grew the wish for more long-term, systematic study which led the way to

the two pioneering settlements of Swarthmore in Leeds and St Marys in York.

The religious links have become more tenuous but the Society of Friends still nominate some members of the council.

The crucial link with the past however is in the centre's constitution which insists that the 2,000 or so adults who use the centre as students each week should hold the majority on all committees. This makes it one of the few centres where students actually make the hard decisions about finances and course development, not just about the cost of a cup of tea.

Last week the finance committee had the unpleasant task of combating a loss which had arisen because summer courses had failed to break even and because of the heavy cost of concessionary fees. It was the students themselves and their representatives who had to take the decision that probably up to six courses would need to be cut.

As an independent centre, Swarthmore has to balance its books without the question of any wealthy trusts or individuals. In recent years it has come to rely on Leeds Education Authority for 60 per cent of its grant.

The rest has to be generated from course fees and in particular over the last few years from the Manpower Services Commission for a second chance programme for the adult unemployed. This has certain disadvantages

Swarthmore's elegant facade. Responsibility for the bricks and mortar is an awesome task



in the marketplace, not least the fact that the centre cannot afford to completely waive the fees for certain categories of student like the unemployed. The biggest reduction it can afford is half-price fees. But nevertheless 40 per cent of the centre's students are unemployed which says much about the quality of the courses and the attractiveness of the centre itself.

Painful decisions are corporate ones. Each student course appoints a class representative who sits on the house committee. Representatives with members appointed by the education authority, the Workers' Educational Association and Leeds University extramural department, friends of Swarthmore and other various bodies.

It is that involvement in the day-to-day decisions which gives the centre a special warmth and closeness. Mrs Betty Fatkin, a student, chairs the governing body. She joined the centre over 20 years ago after reading an article in the local newspaper about the new centre where she could leave her son while she studied, starting with a three-year university tutorial in sociology.

"The difference with Swarthmore is that there is no hint of the back-to-school feel that other institutions have. You feel that you do have control over events and there are none of those petty rules and regulations found elsewhere," she said.

The student house committee also organizes and is responsible for the coffee bar and playgroup. They rely heavily on the students as volunteers who help serve, make up the salad rolls and play with the children.

The idea that students, administrators and tutors are all equally and democratically involved in the running of the centre epitomizes the distinctive character of the Educational Centres Association of which Swarthmore was a founder member. The fact that the ECA is the only national body to represent some 400,000 students at 150 centres in more than a dozen ways means that the threat to cut off its Department of Education and Science grant over three years would be the end of a lifeline.

The Swarthmore students are jealous of that national link. "The

Government does not seem to understand that no other body – not even the National Institute for Adult Continuing Education – has that dialogue with the students," said Joyce Connor, another student member of the council and member of the ECA executive committee. "The learning experience of a student involved in that process can be as great in the classroom."

Twice a year after the ECA conferences, a car load of delegates from Swarthmore returns, exploding with ideas which have to be consigned to paper for immediate action, striking while the iron is hot. The last conference on participation made them think this time that the weak link at Swarthmore was student involvement in the curriculum development in classes.

As a result students will now be getting together regularly to discuss course content with their part-time tutors complementing the programme planning board which is meant to look into such matters.

The warden at Swarthmore, Martin Russell, must be given some credit for the success and degree of student involvement in their centre. He himself is self-deprecating about his role. After years working for the education authority in Milton Keynes, he finds just the responsibility for the bricks and mortar of the centre an awesome task.

Open from 9am in the morning to 9pm at night, six days a week, the heavy use takes its toll on the fabric of a building which was originally designed for housing. He is overseeing the building of a new hall at the rear of the terrace to replace a tumbledown prefab.

The MSC was prepared to meet the labour costs but the rest of the £100,000 had to be met elsewhere. And since the centre is not allowed to accumulate a capital fund for rebuilding, it had to be met through an appeal fund. Two mortgages later the building is still incomplete because of skilled labour shortages and architectural problems and a further £23,000 is still outstanding.

One of the successful areas of expansion for the centre has been through educational awards for the adult unemployed. Apart from the general complaint that using MSC money

distorts everything else the centre does, the 18-month-old second chance scheme funded through the Voluntary Project Programme has evolved to meet a real need.

"There was nothing else for me before this except watching snooker on the telly," said Eric who five weeks into the broadly-ranging course knows that he wants to go on to do a BTEC computer course.

Another 25-year-old spent his last five years at school playing truant but had found the atmosphere at Swarthmore different enough to look again at the large gaps in his education.

Meanwhile alongside them in the science laboratory is a graduate in geology who has been told that his third class degree is useless for teaching and perhaps he ought to consider being a trainee chartered accountant. That prospect did not appeal to him so he is using this 12-week course to think again.

The unemployed students are also involved in the running of the centre and can influence courses. For example, it used to have a section on coping with unemployment but they said there had been enough talking about it and did not need any more formal discussion. It now goes on informally among themselves. There is also less rigidity between science and non-science subjects built into the course.

For others a fresh start course provides a more structured return to study with optional gateway entry courses, foundation and continuation courses leading to a specially negotiated scheme whereby students can attend O and A level courses at Swarthmore backed up with home study material written by the National Extension College. It means that adults who have become accustomed to studying there do not need to face a classroom of young school-leavers in a strange new environment.

Sir Keith Joseph, Secretary of State for Education, wants to give greater democratic control over to the consumer in school education. But adult education and centres like Swarthmore, in league with the ECA, where this is already happening hand-in-hand with a healthy voluntarism are to be penalized. Are they not right to ask where is the justice in that?

respectable record overall in the field, it transpired that Britain and West Germany were just as likely to be involved.

As on so many international questions, exact comparisons between nations proved impossible because of the lack of adequate statistics. This is one of the areas in which the Council of Europe may be able to act effectively, unlike some of the others which were the subject of conference recommendations. In this category might come urgings to universities to hold open posts abroad for lecturers who take temporary posts abroad without the safeguard of unpaid leave, an examination of the possibility of uniform tax treatment of income from overseas work, and the treatment of periods outside the university (whether abroad or in industry) as a positive asset in filling academic posts.

However, the conference did throw up a number of interesting propositions, as well as constituting a link in the council's continuing concern about the subject of academic mobility, particularly with the third world. The most striking was the proposal discussed in a paper by Dr John Salmon, late of the Council for National Academic Awards, for a so-called European term during which exchange activities for postgraduate and postdoctoral activities could be concentrated.

Most of those taking part in the Rome meeting would not expect the numerous recommendations to bear fruit in the near future. But, as the secretariat was anxious to stress, the whole issue of academic mobility has to be kept in the public eye during times of financial stringency if it is not to shrink still further. Yet at the same time, exchanges and short periods outside the home university also provide rare opportunities both for the institution and the individual.

A new book tells ACARD how to make its choice of research to support. Jon Turney reports.

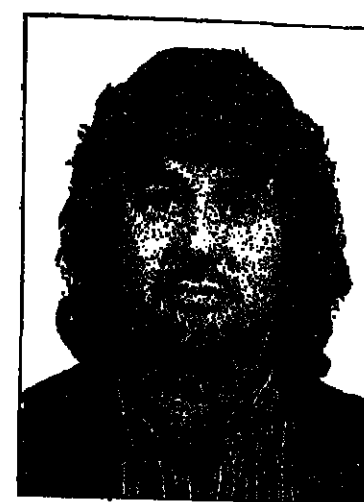
The classic response to evidence that money troubles are harming the fabric of the nation's research is to demand more cash. But if the demand falls on deaf ears, as it usually does today, there is a fall-back position: try and make a better choice of research support.

The research councils and Government committees all now argue that if we can't do everything, we must do a few things well. An ambitious committee set up by the influential Advisory Council for Applied Research and Development (ACARD) is looking at new ways of making these choices. And a new book published last Monday tells them how.

The book, *Forecasting in Science*, is the result of a study for the ACARD group by two fellows of the Science Policy Research Unit at Sussex, John Irvine and Ben Martin. The two, who are best known for their work on assessing large labs like CERN or astronomical observatories, are also responsible, with Roy Turner, for the analysis of British scientific performance reported below.

The terms of reference of the ACARD group are a challenge to the customary division between the two main research policy committees, ACARD and the Advisory Board for the Research Councils. For while ACARD is ostensibly concerned with applied research and development, they decided to ask their new group, chaired by Mr Charles Reece of ICI, to try and identify "promising areas of science". They meant areas with long-term commercial implications, but the group's brief clearly cuts across the concerns of the ABRC, which oversees the work of the five research councils.

The reasons for this new initiative are outlined in the book. As Martin and Irvine say, many areas of science formerly supported as basic research are becoming more and more important for industry. As science and technology become more closely wedded, some fields of basic research are transformed into "strategic research".



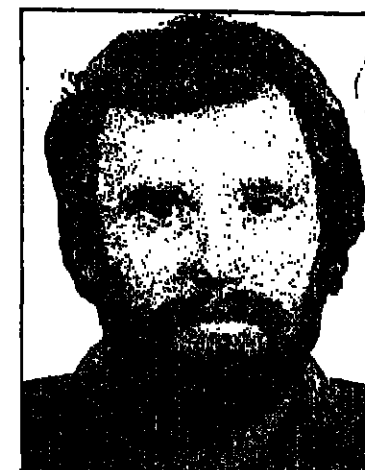
John Irvine

the work which will sustain the next wave of industrial development. The problem is to spot these early to steal a march on your industrial competitors. How is this possible?

Early on, the ACARD group decided to commission the Sussex researchers to examine how the problem is tackled in four other countries – France, West Germany, Japan and the United States. They found wide differences in the regard for strategic forecasting, with the Germans committed to leave research choices as far as possible to individual judgment – to the market – and the Japanese operating a complex system of surveys and consultations designed to foster consensus about national research priorities.

In between, the French and the Americans have dabbled in forecasting, but haven't yet developed it to the pitch seen in Japan. American efforts, like the "field surveys" organized for the Committee on Science, Engineering and Public Policy have been prone to bi-jacking by small groups of scientists making propaganda for their discipline. The authors quote one anonymous US offi-

Winners and losers in the forecast field



Ben Martin

cial arguing that the scientific community lost public credibility this way. Instead of trying to pick priorities, and identify declining areas; "they just point out growth areas and demand more money". It sounds familiar.

The French have moved into forecasting more recently, under President Mitterrand, but seem to have mixed feelings about the results. A French official in the Ministry of Research and Technology felt the problem was not identifying the areas that would be important. Everyone agreed on the need to support new materials, microelectronics, energy systems and biotechnology. The real task, he felt, was getting the message across to industry and the civil service. Sounds familiar again.

Much less familiar to the British reader is the way they do these things in Japan. There, a network of forecasters in government agencies, including the Science and Technology Agency and the Ministry of International Trade and Industry (MITI), companies and firms of consultants all produce ideas about how to channel research funds. For exam-

The result is a selection of basic research lines which may lead to improvements in generic technologies like microelectronics or genetic engineering, rather than being confined to one or two specific problems. The detailed choice of applications is then left to industry.

Of course, Japan is deeply committed to planning, and the officials Martin and Irvine spoke to were not even very interested in the accuracy of past forecasts. The next plan is the thing. No one expects the ACARD group to come up with anything as sweeping as the MITI Vision reports which map out technical and economic goals, a decade at a time.

It would suit British habits better, they seem to feel, to offer an analysis of our strengths for others to consider, rather than making strong prescriptions. But their report is sure to have an influence on other bodies which have financial powers, as opposed to merely offering advice.

The ABRC, for example, may soon have to face up to harder choices about research support within the five councils. These will not only be choices of areas to pull out of altogether, but also of where to simply maintain a basic scientific presence so we understand what is going on in the rest of the world, and where to aim to be in front.

Where to take each option, what the Organization for Economic Cooperation and Development calls defensive and aggressive approaches to areas of science, is the trickiest problem. The ACARD group's official report, when it is finished in a month or two's time, will be a first step towards more detailed planning of a national science and technology strategy, which will be no more than the sum of such choices.

Forecasting in Science – Picking the winners by John Irvine and Ben R. Martin with Frances Pinter.

The great British slide in the world of science

Anyone concerned with the health of British science has a fresh cause for alarm this week. New studies suggest the patient has been sick for some time, and is growing weaker.

The results are both good and bad news. For years, British science policy-makers have been working in the dark. They had lots of opinions but little hard data. So the publication of figures drawn from the largest collection of world scientific publications marks an important step towards putting the debate about research funding on a proper statistical footing.

The bad news is that almost all the figures are in line with the worst predictions. They show a ten-year slide in Britain's contribution to global scientific output, and a similar decline in the influence of the papers we do manage to publish. Worse, these figures date from before the real squeeze on the science budget, still growing tighter each year.

The figures in question, released by the Science Policy Research Unit at Sussex University, are the latest attempt to assess the output from British labs as opposed to the time and money put into research. They are drawn from an analysis of papers in 2,000 scientific journals between 1973 and 1980. The journals' contents are re-typed in the *Science Citation Index* and processed by an American computer firm for the US National Science Foundation for its annual calculation of "science indicators".

The same data have now been reworked with Britain in mind by a team at SPRU, who have studied publications in all the leading countries in eight major disciplines. The results are biased toward English language journals, and the constant journeying of the best scientists to the United States may conceal some changes. But they are the best guide we have to national scientific productivity.

The trends revealed show this country's contribution to world science shrinking steadily over the decade studied. Table one, the world share of

publications for all fields combined, shows Britain's share of the total declining by almost 10 per cent between 1973 and 1983. Two of our main industrial competitors, Japan and West Germany raised both their absolute scientific output and their share of the total in the same period.

The same data can also be used to work out the number of citations papers from different countries receive, and analysis of who cites whom can give a measure of the influence wielded by a country in world science. By this indicator, Britain's decline was steeper still, the figures showing a 13 per cent drop share of total citations.

These results come from the overall total of over 250,000 papers a year. The same pattern also appears in individual disciplines. Table two compares the trend in the number of papers the database records from the UK with the global trend over the same time. Where the world total has dropped, the British decline is generally steeper, especially in maths, engineering and technology. We roughly match the global trend in clinical medicine and biomedical research, and appear to have performed well in biology and earth and space sciences.

However, even these figures have a worrying side. The rise in our productivity in earth and space sciences is due to big increases in astronomy and astrophysics – fields most other countries have reduced in priority. And the overall figures for biology derive from British increases in fields like botany, entomology and zoology while important areas like biochemistry and molecular biology have not grown as fast as in other countries.

The indications for some of the key disciplines with industrial significance are also disturbing, although the general engineering top at 50 per cent, followed by acoustics (30 per cent), materials science (32 per cent) and computer engineering (28 per cent). Smaller falls are shown for solid state physics, physical chemistry and metallurgy.

6.7 per cent in 1973 to 5.5 per cent by 1980, a very similar pattern to applied physics and materials science.

The SPRU analysts have used the figures for the 100 subfields the Americans use to divide up the map of scientific knowledge to gauge where Britain's overall strengths and weaknesses in research lie. They rate strong areas for Britain as those where we contributed 11 per cent or more to all the world's publications. They include several medical specialties, ecology, botany and marine biology, but relatively few industrially important fields – electrical engineering and electronics, materials science and organic chemistry.

However, the list of relatively weak areas, where we produce 7 per cent or less of the global output of papers, abounds in areas with strong links to important technologies, including acoustics, applied physics, polymer research, optics and metallurgy.

The data for individual fields can also be used to spot trends, and lists of areas where Britain improved its share of world publications between 1973-1980, and where our proportion slipped, tend to bear out the conclusions indicated by the status analysis for 1980. Areas where more than 15 per cent increased by more than 15 per cent included entomology, parasitology, tropical medicine, nuclear technology and oceanography, as well as astronomy and astrophysics. This is very often due to decreases in the work recorded in these fields from other countries, perhaps reflecting greater inertia in the British research funding system.

On the other side, the figures display a decline of over 15 per cent in our share of publications in 27 fields, with general engineering top at 50 per cent, followed by acoustics (30 per cent), materials science (32 per cent) and computer engineering (28 per cent). Smaller falls are shown for solid state physics, physical chemistry and metallurgy.

Table 1: Trends in overall national scientific performance, 1973-80 in percentages: world shares of publications and citations for major industrial nations for all fields of science combined.

	1973	1975	1977	1979	1980	% change 1973-80
USA	38.2	37.3	37.1	37.1	36.5	-4.5
United Kingdom	8.2	8.0	8.0	8.3	8.3	-0.9
West Germany	8.0	8.4	8.3	8.3	8.2	+3.1
France	6.6	5.8	5.9	5.3	5.4	-2.7
USSR	9.0	7.9	7.9	8.0	7.8	-12.7
Japan	5.3	5.4	6.0	6.4	6.8	+29.9
Canada	4.4	4.3	4.4	4.4	4.1	-5.9
Rest of world	22.3	23.5	23.8	24.3	24.8	+10.9

Source: CHI Research/NSF "Science Literature Indicators Data-Bank" (held at SPRU).

Table 2: Percentage change in papers recorded, 1972-1980.

	World trend	UK trend
Mathematics	-22.7	-26.8
Engineering and technology	-25.0	-34.0
Earth and space science	-4.85	+12.3
Physics	+5.7	-1.0
Chemistry	-1.2	-14.2
Biology	-5.0	+2.0
Biomedical research	-6.8	-3.2
Clinical medicine	+5.8	-5.8

Source: NSF science literature indicators database/SPRU.

Table 3: National Publication Counts, solid state physics, 1973-1980.

	1973	1975	1977	1979	1980
US	1518	1351	1378	1281	1449
UK	384	344	323	296	331
Germany	372	422	385	428	408
France	338	300	285	280	381
Japan	226	180	230	282	334

Source: NSF database/SPRU.

As with any statistics, there is scope for argument about detailed interpretations of these figures which still reach the interested reader as a large pile of computer printouts. There is a relatively acquiescent view that the slide in our relative position simply reflects the fact that as science goes on expanding other countries, who started behind us, are catching up. This "end of empire" argument is backed up by the fact that one of the largest increases in proportional contribution indicated by the NSF figures is in the "rest of the world" category, which includes many third world countries.

But the figures seem sure to intensify concern about basic science in Britain, a concern which has already led the Royal Society to start studies of the health of specific areas of research, at the behest of the Advisory Board for the Research Councils. It would be very surprising if these studies, which will use some of the same techniques, produce data which run against the general trend evident in this study.

One outstanding doubt remains, however. How much worse have things got since 1980? For the latest figures in the NSF database record the state of play before the real value of Britain's science budget began to drop more steeply in the early 1980s. The rate of decline already showed signs of increasing in the later years of the decade studied. It is likely the figures up to 1982, which should be available in Sussex in the first half of 1985, will show a continued weakening of our relative position. The move to gather accurate statistics about British science looks set to continue producing uncomfortable results for the Government.

Not just students but academics too want to travel. John O'Leary reports on a recent Council of Europe conference

The continuing debate on student mobility has tended to obscure developments in another aspect of the international tradition of higher education which has come under similar pressures in the last few years. Some attempt to redress that balance and rekindle interest in academic mobility is being made by the Council of Europe, which recently held its third conference on the subject in Rome.

The conference touched on questions of mobility within countries, which certainly have been a matter for debate in the United Kingdom at least, but was concerned primarily with the free exchange of lecturing staff and researchers across national boundaries. It produced a battery of recommendations aimed not only at overcoming some of the barriers to such movement, but also at encouraging some degree of standardization of practice across Europe.

In fact, domestic and external affairs are so mixed in any thorough discussion of the issues, if only because so many of the exchanges which go to make up academic mobility depend on policy regarding sabbaticals or unpaid leave. In three days of debate in Rome, there was little reluctance to become involved in domestic questions, therefore, although the participants must have been well aware that their influence would be restricted in such matters.

An earlier meeting, at Stockholm in 1982, laid the groundwork for the council's current debate, establishing two central principles: that mobility was not an end in itself but an instrument for education and research, and that mobility was necessary to reinforce North/South cooperation and to contribute to development aid.

The subject was also central to the concerns of the council's biggest higher education event,

Rights of passage

Conference U-2000, which attempted to set an agenda for European institutions as they approached the turn of the century.

European ministers responsible for research returned to the theme at their meeting in September with a more detailed programme for encouraging mobility specifically among researchers. They wanted to encourage a "European, scientific and technical area" open to all states within the council and asked the European Science Foundation to produce an assessment of progress on mobility. In particular, they were enthusiastic about the potential of a European researcher's card and anxious to develop scientific networks, managed by the scientists themselves and concentrated in six broad categories.

The Rome conference covered all academics from postgraduate level to professor, justifying the attention given to the subject on the grounds of quality in scientific research, the renewal of teaching and its contribution to European integration.

A preparatory paper for the meeting stressed: "A scientific and technical Europe will be a more vital and powerful force once it can improve communication and cooperation, that is to say, provide itself with a variety of networks enabling people to move freely, ideas to be exchanged, innovations to become better known and, with research and development costs being more equitably shared, results to be more widely and more rapidly disseminated."

As a starting point, the council's deliberations focused on Jean Capelle's 1977 report on

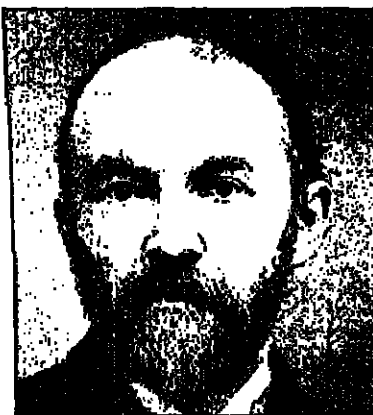
mobility among students, academic teachers and researchers, which is still considered the definitive work in the field. Most of its 25 recommendations remain unfulfilled despite their continuing relevance. Among the measures it proposed to speed up interchanges within Europe were the exclusion of postgraduate and postdoctoral fellows from foreign student quotas, freedom from the requirement to obtain work permits both for them and for academics, the opening up of scholarships and loans to foreigners.

An updated assessment for the Rome conference identified seven immediate factors hampering the flow of academic personnel between countries. They included some over which the universities (meaning all higher education institutions in Council of Europe parlance) have no control, such as ignorance of foreign languages and high travel costs.

The remainder, however, were such problems as unnecessary red tape, lack of recognition of study periods spent abroad, inadequate information on foreign institutions, accommodation problems abroad and "almost universally inadequate scientific evaluation of the results of bilateral and multilateral programmes."

In spite of this, the conference found that exchange programmes were flourishing both within Europe and outside it, where they had been encouraged. This was not always in the most expected quarter either. It had been accepted, for instance, that interchange between Europe and Latin America would be centred on Spain, Portugal and, to some extent, Italy. But, with a

Malcom Bradbury looks at the development of the university novel and how universities are



BIBLIOL COLLEGE
Sir, - I have read your letter with interest, and judging from your description of yourself as a working man, I venture to think that you will have a much better chance of success in life by remaining in your own sphere and sticking to your trade than by adopting any other course. That, therefore, is what I advise you to do. Yours faithfully,
T. TETUPHENAY
to Mr J. FAWLEY, Stonemason.
Thomas Hardy, *Jude the Obscure*

Foreign countries with varying rates of exchange

All universities now seem to have acquired the lineaments of what Howard Jacobson called "Bradbury Lodge", that exclusive campus at the centre of a quadrilateral bounded by the universities of Oxford, Civic, Redbrick and Newbrutalism. Its buildings through the 1970s were far from encouraging: *The History Man*, in particular, provokes a few blushes these days. Were we really that awful in the early 1970s? Or, from the neo-puritan middle class: we knew something went on in those places, but we never imagined...

Like all misunderstanding, that between the universities and the non-academic public (and increasingly that between the universities and their own recent past) is a mutual one. Each has closed its mind to the other and if academics are accused of elitism, of substituting imaginary for actual problems, then those outside have been guilty of equally superstitious mystification, balkanizing the universities and pushing them away to the fringes of the community.

The universities can no longer afford to ignore society's perceived needs. Education, like politics and religion, has become a business (and a growth industry) in America. That seems far enough off here (Santich apart) not to provoke any panics yet universities are awakening to the uncomfortable recognition that henceforward they will have to Sell Themselves.

David Ogilvy, a man who can read an advertisement with more aplomb than Roland Barthes ever dreamt of, was asked to describe how he might set about marketing a product which, by every indication was counter to market trends. What he preferred to write was even more telling, a reply to his nephew's questions about the value of a higher education. Or rather, three apparently contradictory replies. How are we to interpret that? Adman glib? Fridge-to-sidmos cynicism? Or do we take the more positive and comforting point that, for all the exigencies of policy and popular mythology, the universities are ours, that they are there to do whatever we want or need with them.

Education, or rather the degree that comes with it, is no longer some kind of social and professional American Express card, quickly and loo-easily used, paid up only seldom. But it is a kind of currency, occasionally depressed, more often inflated, always the one sure unit of social progress.

The rates of exchange, as Bradbury's hero discovered in his imaginary eastern state, vary wildly but one or another of them is inescapable. If universities have become like foreign countries, they are also (the sub-text of campus fiction) remarkably like novels, still the best index of our cultural and social success and failure.

Graduating from nostalgia to reality

In the early 1950s, when as a redbrick undergraduate I started my first novel *Eating People Is Wrong*, set in a provincial university very much like my own what is now called the "university novel" was hardly an entity. It still remains an uncomfortable designation, being one of those curious sub-generic classifications that defines a fiction by its subject matter rather than by any fundamental feature of its structure or form.

Whether Conrad relished being called an author of sea-stories I cannot recall, but most of those of us who are called "university novelists" are uneasy with the term. Yet it is true that in the social history of recent fiction, British and also American, some sort of place has to be given to that now quite substantial and in some ways consecutive body of novels which have taken the university or the campus as a significant setting, and even to the way they have read the world of student experience and higher education as an emblematic centre in contemporary society.

Before the 1950s there were, of course, many novels which took universities - and particularly in Britain the ancient universities - as important parts of their subject. From the romantic bildungsroman to the light-hearted, fantastic wit of *Zuleika Dobson*, from the intellectual education of Rickie Elliot's Cambridge to the social education of Charles Ryder's Oxford, the university landscape afforded a usually warm and enlightened setting for young emotion, and became part of the accumulated charm of the institutions and cities in which the books were set.

Even *Jude the Obscure* celebrates, if from the outside, the mystery of Oxford, both intellectual and social; and such novels frequently had about them the social intimacy of a knowing roman à clef, the air of an old boys' reunion. The capacity for nostalgia in such materials was elegantly recreated in the television version of *Brilliant Revisited*, which largely set aside Waugh's own warnings about the dangers of over-investment in charm.

Perhaps then part of the reason for the feeling of difference about the kind of university novels that began to appear in the 1950s was that they were a good deal less concerned with recollection, nostalgia and the common knowings of a social community. Today *Lucky Jim* perhaps does not read as a work of social defiance, and the adventures of Jim Dixon faces have the pallid look of daffodils. But with comic outrage the book contradicts an attitude toward art, intellect, culture and the educational institution which, however much parodied, had much force at the time of the novel's writing: Jim Dixon's redbrick university does not invite nostalgia, and its relation with the commonplace, provincial, lower middle-class community are socially critical enough to give to Dixon's downing the morality of one kind of realistic common sense.

This looked pointed enough at the time to stir Somerset Maugham to his denunciation of "heretics" like Jim Dixon and John Wain's Charles Lumley in *Hurry On Down*:



They do not go to the university to acquire culture but to get a job, and when they have got one, scamp it. They have no manners, and are woefully unable to deal with any social predicament. Their idea of a celebration is to go to a public house and drink six beers. They are mean, malicious and envious.

In fact a good many of the university novels of the 1950s were a voicing both of a social and a formal change in the kind of British fiction; and one reason why the university novel looked important was that it expressed a social dissent from many of the familiar materials of British fiction, along with an aesthetic dissent against the spirit of modernism - a tendency which became, all too easily, identified with the spirit of "Bloombury". It seemed to express a shift in the class-source of fiction, a rationalisation of the kind of "Englishness" that should feed the English novel.

Hence perhaps the intimacy between these newer writers and the work of authors like William Cooper and C.P. Snow, though in Snow's Cambridge novels of the time - *The Light and the Dark* (1947) *The Matter* (1951) and *The Affair* (1960) - the logical step taken is from the provincial university college to the ripe Cambridge glow, where power and Leoville Poyferne are dispensed in equal measures. These were the days when provincialism and realism looked like cultural renewal, and the redbrick setting could acquire a homespun moral glow.

This was very much to become my own subject of commentary in *Eating People Is Wrong*, a book that, because of my slow way of writing, was not to appear until the end of the 1950s - and though it is a revision, something of a try at reading a decade during which university education had become more important, and the role of the intelligentsia had changed. Most novels are in some sense a commentary on other novels and the genre in which they participate; and *Eating People Is Wrong* comes late enough to be already something of a commentary on the university novel species.

In some slightly testy and self-protective, but very illuminating observations (on this rising postwar sub-genre, George Watson's *Positions of Academic*, *Edinburgh*, 4 November 1978, pp. 42-6) suitably points out that one reason the university novel had a growing season at this time was that the university was now becoming important in many people's lives, and appeared to have some significant part to play in the social changes taking place, not least because of the growing influence of academics and intellectuals. What is more, this was a period in which the values of liberalism, humanism and intellectual disinterestedness acquired a special social significance as, in the aftermath of a war against a totalitarian adversary and with the spread of another form of it in eastern Europe, matters of freedom and individualism had to be investigated and rearticulated in western literature.

My own novel was as much a novel about the attitudes and feelings of a post-political and provincial intelligentsia as it was a university novel. None the less it was to some degree an evocation of personal experience, an experience, however, of some representative significance.

I was myself a beneficiary of the Butler Education Act, and a first-generation student; I went to a provincial college of the University of London, and did most of my emotional, intellectual and artistic growing up in a

portrayed: David Ogilvy looks at what they can offer and whether we should buy.



Malcom Bradbury: "My own novel... was to some degree an evocation of personal experience."



David Ogilvy: three different answers

university environment, as an undergraduate and then a postgraduate student. My path took me nowhere near the ancient universities; and I went on from the British provincial university system to the state universities of the American middle west.

This was a time when universities in the United States, themselves rapidly expanding and growing in influence, were becoming the new patrons of writers and intellectuals. And indeed the theme of my next novel, *Stepping Westward*, is that of the British writer lured toward the American university.

George Watson notes that the British "university novel" had its match in the American "campus novel", which flourished in America in the 1950s for reasons similar to those in Britain. The two great prototypes were Mary McCarthy's *Groves of Academe* (1952) and Randall Jarrell's *Pictures from an Institution* (1954), the latter in part an ironic commentary on the former. They are both very sharp satires about what has come to be called "the new liberalism", and the relationship between the writer or the political intellectual and the university as both a generous and a threatening institution.

Above all they deal ironically with the image of the university as a liberal pastoral utopia, and explore its pre-emptive hypocrisies, the gaps between abstract thought and national political need or personal self-interest. This was a period when the issue of co-optation, the institutionalization of intellectuals and their adaptation to the "uncritical" role of salaried nonconformity, was much discussed in America.

The institutionalization of radicalism has always been one of life's great ironies and agonies and I was conscious of it as a potent period subject. In this sense *Stepping Westward* seems to me to be something of a cross between the "university novel" and the "campus novel", and not just because of its kind of concern with postwar "realistic" liberal expectations and attitudes and their relation to the role of the writer or intellectual within the university in the age of McCarthyism.

I am saying, then, that I wrote university novels for reasons larger than the fact that I had spent a good deal of time within them - and was, indeed, by this time a university teacher of literature in the British system. The very fact that I was a full-time academic rather than a full-time professional writer undoubtedly made me a university novelist in another sense. In that my creative preoccupations were kind to critical and scholarly ones, and had much to do with my engagement with theoretical ideas about the novel, its history, and its liberal form. And certainly the university as a setting or a subject enabled me to find a context of reasonable seriousness in which to explore characters, community, issues and forms.

not easy in Britain to sustain the novel as a form of serious inquiry, but both my profession and my subject matter allowed me to do so.

This meant that my kind of university fiction inevitably responded to the changes that came over universities, and philosophical and critical ideas, during the 1960s, and when I began *The History Man* I was greatly preoccupied with these. As with most university novels, the book has sometimes been read as a roman à clef, and identified with particular crises in particular departments on particular campuses.

Indeed in the real world such crises did occur. In my fictional world, I made them occur as a dramatic testing of the traditional humanism of universities as this was challenged in the late 1960s - just as the traditional humanism of the novel form was.

The intimacy of these two related events has a good deal to do with the fact that this novel is stylistically quite different from the two I had previously written, and engrains its own self-challenge in a mode of distancing irony. The challenge Howard Kirk creates for liberal perception and language is a vision of the challenge that the novel as a species has itself come to face.

Howard Kirk, the radical opportunist desperately trying to invigorate the dying embers of the apocalyptic radical moment, is one kind of history man; but the novel is always just such another, trying to realize the philosophical, aesthetic and linguistic character of his or her own form.

The History Man certainly reflects a challenge both to the idea of the university and to the idea of the university novel; a book of its kind today would have equalled to reflect the challenge created by a new and

doctrinal form of monetarist Toryism. Today, however, I find it curiously harder to write a university novel. This is partly because the species has by now become curiously habituated and domesticated, as a recurrent type on the map of modern fiction. It is so familiar as to have become self-allusive, as David Lodge so brilliantly shows in *A Small World*; Howard Jacobson, taking things a different step further in *Coming from Behind*, has moved it on into the polytechnics, and has his characters visit an institution called Bradbury Lodge.

Not that this is a signal that the course of the university novel has been run. Generic repetition with variation has always, as we academics say, been part of the evolution of the novel; and the species has clearly taken its place within the intense contemporary self-inquiry of much good fiction.

In *A Small World*, Lodge has played and pursued the habitual irony of the university novel. The academic world is indeed in its way a small world, and notoriously a cloistered one, especially in its British form. But as a species of the intellectual, the economic and the historical life of the times, it is also part of the larger cosmopolis of modern life and certainly not free of its contradictions and transformations. It is in more than one sense a world of the mind, and part of the enquiry of the mind, which is also what a novel is.

My own last book was not set in a university but in an imaginary eastern European country, where the contradictory images of east and west, capitalism and communism, the great fading contemporary fictions, interplay. But, as some of the critics have noted, that imaginary country is not unlike a university, just as a university is not unlike an imaginary country.

Giving the customer a choice of options

David Ogilvy set up shop as an advertising man on Madison Avenue in 1949. Today his agency is one of the largest in the world. He started life as a history scholar at Oxford and then dropped out to become a chef in Paris. Not surprisingly, his views on education are strong and vigorously expressed, but how exactly does he rate the value of higher education? Here is how he answered his 18 year old great nephew, who wanted to know...

CHATEAU DE TOUFFOU
86300 BONNES

(49) 46-35-02

June 6 1984

Dear Harry,
You ask me whether you should spend the next three years at a university, or get a job. I will give you three different answers. Take your pick.

Answer A. You are ambitious. Your sights are set on going to the top, in business or government. Today's big corporations cannot be managed by uneducated amateurs. In these high tech times, they need top bananas who have doctorates in chemistry, physics, engineering, geology etc. Even the middle managers are at a disadvantage unless they boast a university degree and an MBA. In the United States, 18 per cent of the population has a degree, in Britain, only 7 per cent. Eight per cent of Americans have graduate degrees, compared with 1 per cent of Brits. That more than anything else, is why American management outperforms British management.

Same thing in government. When I was your age, we had the best civil service in the world. Today, the French civil servants are better than ours because they are educated for the job in the post-graduate Ecole Nationale d'Administration, while ours go straight from Balliol to Whitehall. The French pros outperform the British amateurs.

Anyway, you are too young to decide what you want to do for the rest of your life. If you spend the next few years at university, you will get to know the world - and yourself - before the time comes to choose your career. Answer B. Stop frittering away your time in academia. Stop subjecting yourself to the tedium of textbooks and classrooms.

Stop cramming for exams before you acquire an incurable hatred for reading. Escape from the sterile influences of dons, who are nothing more than pickled undergraduates.

The lack of a college degree will only be a slight handicap in your career. In Britain, you can still get to the top without a degree. What industry and government need at the top is not technocrats but leaders. The character traits which make people scholars in their youth are not the traits which make them leaders in later life.

You have put up with education for 12 boring years. Enough is enough.

Answer C. Don't judge the value of higher education in terms of career advancement. Judge it for what it is - a priceless opportunity to furnish your mind and enrich the quality of your life. My father was a failure in business, but he read Horace in the loo until he died, poor but happy. If you enjoy being a scholar, and like the company of scholars, go to a university. Who knows, you may end your days as a Regius Professor.

And bear in mind that British universities are still the best in the world - at the undergraduate level. Lucky you. Winning a Nobel Prize is more satisfying than being elected chairman of some large corporation or becoming a Permanent Under Secretary in Whitehall. You have a first-class mind. Stretch it. If you have the opportunity to go to a university, don't pass it up. You would never forgive yourself.

Tons of love

David

Antony Sher (standing) as Howard Kirk and Peter Hugo Daly as George Carmody in the BBC production of *The History Man*.

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BOOKS

Empson's intentions

Using Biography
by William Empson
Hogarth Press, £12.95
ISBN 0 7011 2889 5

Sir William Empson was throughout his long and distinguished career the most independent and idiosyncratic of literary critics, unconcerned with fashion or literary politics. He was no less the enemy of orthodoxy and cant than F.R. Leavis, but he never sought to form an Empsonian school or impose a rival literary canon. *Using Biography*, a posthumous collection of essays written between 1958 and 1982, is among other things a sustained polemic against a conservative academic establishment whose hegemony has only recently been challenged.

English and American critics interpret Yeats's poems as implying Christian doctrines whenever that is possible, and when they find it impossible they treat the passage with a tactful sigh as merely a lapse, because they cannot conceive of a good man, with a good heart, holding any other religious belief. Any book by Empson is likely to be challenging and stimulating, and as the passage above shows, he lost none of his wit or spirit of mischief in his later writings. The attacks on the neo-Christian critics intent on sanitizing an author's work are part of his long campaign against the "virtue-monster" - "the God who was satisfied by the crucifixion". Empson more than any of his contemporaries was a man of the Enlightenment; like Gibbon, he looked on religious belief with ironic distaste.

A consistent strain of iconoclasm characterizes the essays in *Using Biography*, each of which challenges the received view of a particular author. The essays on Yeats and Fielding, and to a slightly lesser extent the essay on Dryden, restore to a major author the complexity critics prefer to smooth away, and contain the kind of close readings of literary texts at which Empson always excelled. The three Marvell essays, on the other hand - a gossamer web of biographical speculation - hardly touch on Marvell's poetry and seem remote from Empson's major interests. Readings of literary texts can be suggestive rather than definitive, but facts are facts: the Empsonian method of imaginative expansion of the implications in a passage simply does not work when turned into biographical fantasia (not using biogra-

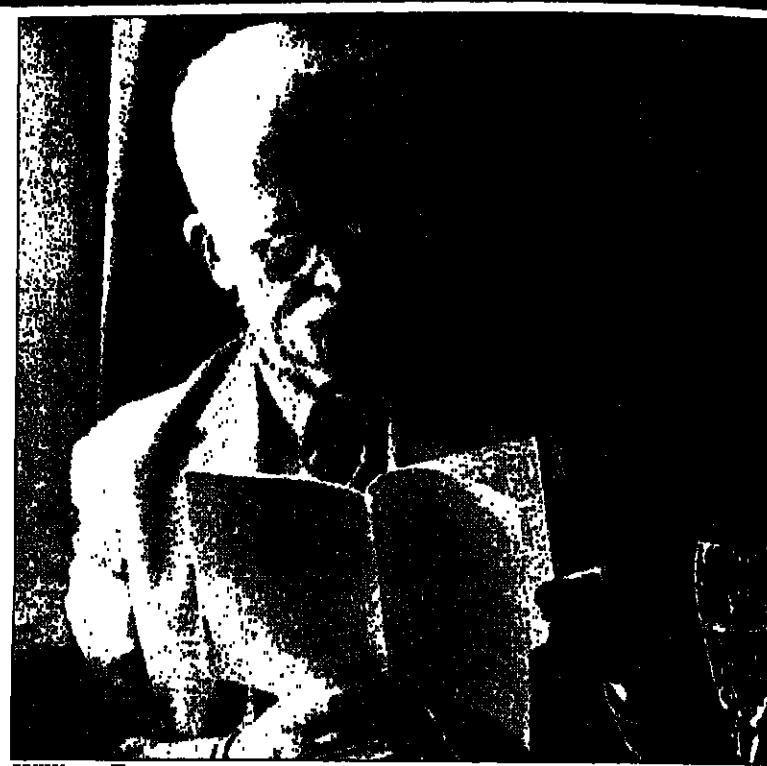
phy, but inventing biography). There is also a quality of obsessiveness about the three Marvell pieces which is somewhat at odds with the spirit of tolerance and civilized charm which generally characterizes Empson's writings. One or more of these might have been omitted and replaced by one of Empson's late essays on Donne - "Donne the Space Man" (1957), "Donne in the New Edition" (1966), or "Rescuing Donne" (1972) - all of which demonstrate Empson at the top of his form and fit in well with the overall theme of reevaluation and iconoclasm.

The two essays on *Ulysses* encapsulate the volume's strengths and weaknesses. The thesis they argue seems to me highly dubious and might at first appear merely aberrant, a misreading: Empson argues that in the final chapters of *Ulysses* Bloom is attempting to procure Stephen as a lover for Molly, and that Joyce suggests that Stephen will return the next day, accepting the bait. But the value of any critical reading cannot be measured on a scale of correctness. In a sense it is irrelevant whether Empson is right or wrong in his interpretation, since he succeeds in making the reader think afresh about Joyce's great and immensely problematical novel. There is always an element of play in Empson's criticism,

as well as an element of risk: we can enjoy the spectacle of a supple and original mind at work on a text, and our own critical faculties are sharpened in the process. Here as elsewhere Empson provides evidence for his own rebuttal, presenting with exemplary fairness the opposing view that "nothing happens after the end of a novel". Such a position is not inconsistent with Empson's statement that the final chapters of *Ulysses* raise questions, "refusing to tell the answer", since any novel is continued and completed in the minds of its readers, rather than in the subsequent lives of its invented characters. An author's intentions are admissible primarily from the words he has written; we can bring to the aid of interpretation whatever outside knowledge we may have, including biographical knowledge, if we are sufficiently tactful and sensitive in applying it. But we should be aware that, as Empson has so brilliantly shown in his earlier writings, the latent meaning in a work may not correspond to the author's overt intention.

Warren Cherniak

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William Empson

Scrupulous fidelity to words

The Force of Poetry
by Christopher Ricks
Clarendon Press: Oxford University Press, £19.50
ISBN 0 19811722 1

W. H. Auden wrote of Christopher Ricks's *Tennyson*:

Reading Professor Ricks's comments and observations convinces me that he is exactly the kind of critic every poet dreams of finding... what [the poet] hopes for is that critics will notice the technical means by which he secures his effects. Alas, so few critics do. Professor Ricks is a happy exception.

This gathering of essays, published in various places over a dozen years, felicitously substantiates Auden's appreciation of Ricks's exceptional talents as a critic of poetry - talents so unflinchingly deployed in the service of others, so subtly attentive to others' utterances, so alive to the peculiar problems of crafting poems that one wonders, as of a wizard motor-mechanic who cannot drive, how he is not a poet himself. In his bristly and deeply felt essay on "Walter Pater, Matthew

Arnold and Misquotation" (written by "someone who believes that Arnold's little finger is worth Pater's whole hand of little fingers") Ricks worries at the distinction between criticism and creation. When Arnold said "Everybody would be willing to admit, as a general proposition, that the critical faculty is lower than the inventive", Ricks sharply endorses Arnold against Pater (or any who, like Harold Bloom in praise of Pater, would obscure the difference) and asserts that "the one plain place to locate the distinction is in a writer's very words, and in some sane restriction upon a critic's right to rewrite them."

Scrupulous fidelity to another's words and a paradoxically energetic and argumentative self-effacement on the part of the critic whose job it is to service, burnish, and bring alive to a less than attentive audience "all the force of poetry" - this fidelity and energy is apparent in every crackling line of Ricks's prose. Yet there is too a sprezzatura about Ricks's angles and perspectives. In prospect the thing he is about to show us seems either so difficult of achievement or, often, so apparently inconsequential, that we wonder, by the end, how so much (mostly) was made of so little.

In the *Confessio Amantis* we dwell on John Gower's use of the word "thing", and move to rhymes and pronouns; attention is drawn to Andrew Marvell's frequent self-reflexive imagery, often signing itself with the word "own". The Mind, that Ocean where each kind/Does straight its own resemblance find", and ex-

pands into speculation on the relation between the reflexive image and civil war. Ricks demonstrates "how variously pervasive is the self-inflicted simile" in the contemporary Ulster poets. It is a coincidence? Scrutiny of Milton's internal rhymes (particularly "light") exfoliates into larger significances; Samuel Johnson's renovation of cliché ("a corollary of Johnson's convictions about life and literature") is approached from the unlikely ground of Johnson's schoolboy translation of Joseph Addison's Latin *Battle of the Pygmies and Cranes* (1698). One essay on Wordsworth invites us to contemplate the white space at the end of the line and reflect on the ever-so-simple fact that "in prose, line endings are compositional. In verse compositional"; a second makes us look, and think very hard about, Wordsworth's use of prepositions. The two essays on Geoffrey Hill (the best available criticism of that fine poet) concentrate our attention on (by now we have learned the trick) parentheses and hyphens.

Other poets discussed include Thomas Lovell Beddoes ("always hanging by his finger-nails above literary history's oubliettes"), A. E. Housman, Stevie Smith, Robert Lowell (on a new, and a particular kind of pun), a brief but luminous piece on Philip Larkin, and a marvellous account of William Empson's poetry and its responses to parenthetical, salted with characteristically brilliant excursions into imagery of begetting in Donne. It is, characteristically, the sort of brilliance that illuminates not the critic but the creation, which persuades us to

see in a text more than we had thought possible. The *mechanics* of this achievement are glimpsed: the faint rustle of an enormous card-index of lines and allusions (out of which Bob Dylan, among others, pops like a Jack-in-the-box), the insistent nagging at detail; and the creative, rhetorical devices accumulating to excite, organize or reorientate the reader's responses. Gower meets the bizzariness of his stories with "steely mildness" (doesn't he?); Marvell has a "miniature miracle of inward vistas", a "haunting interminability", some words of Orwell "have a weirdly bright undertow"; of Milton's "Love without end, and without measure Grace...". "How finely the line chooses not to end with its word 'end', and how lovely this metre's 'measure'". And how can we not assent? - as we cannot but to the resonance of "the contained breath and silent eloquence of brackets".

Concluding the book are four general essays, on clichés (an acutely prismatic and nimble argument), on lies (coruscating with lexical wizardry and showing us why 'lie/lie... is "simply the most important pun in the language", on misquotation, and a new essay on American English and its relation, kind of, to the real thing and the transitory, and all. Let us hope the book goes into paperback as soon as possible.

R. D. Bedford

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Stage right

Elizabethan Stage Conventions and Modern Interpretations
by Alan C. Dessen
Cambridge University Press, £17.50
ISBN 0 521 25912 6

In a year when the Royal Shakespeare Company is swinging towards conspicuously extravagant illusionistic sets - when *Richard III* is being performed at Stratford in what looks like a transcript of Westminster Abbey painstakingly reconstructed on the Victorian stage - it is timely to be reminded of how this trend must mark a conscious reaction against the work of those scholars and directors who, over the last thirty years or so, have concluded that Shakespeare wrote for and was best served by a non-illusionistic stage.

This study, the result of a survey of almost four hundred plays by Shakespeare and his contemporaries, reminds us that in the Renaissance dramatic realism did not imply theatrical illusion. Professor Dessen offers us a series of studies of the devices, theatrical and dramatic, used by the playwrights to bring, as Dr Johnson said, "realities to mind" - conventions for curdling continuous action (interestingly enlivened by comparisons with cinema techniques), differences

between fictional and theatrical place, Elizabethan "darkness" and modern lighting, changes of locale, stage violence, and stage figures that may be seen by the audience and certain characters but not by others.

The work makes a useful contribution to both theatre history and dramatic criticism; it will help teachers cope with the difficulties of treating drama as theatre encountered by students brought up in the age of the novel, film, and television. Dessen's kind of analysis offers an escape from the straitjacket of character criticism in particular for it will encourage the study of Elizabethan scenic form and thereby make students aware of all that is not "personality", a necessary preliminary to their understanding of the social and political structures explored by the plays of this period.

Dessen's case is not, however, an easy one to make. Elizabethan dramatic texts survive only in mutilated forms. Even if the dialogue is more or less intact (which may account for the privileging of personality and poetry in more old-fashioned critical works) stage directions are at best abbreviated and often non-existent. Dessen offers a sharply focused account of the difficulties of interpreting them, and thereafter contrasts his methods with what he calls the "logic of realist interpretation". This he does not define in abstract terms - nor does he offer an alternative account of theatrical mimesis - but his historical investigations will make us chary of detecting a nascent theatrical realism inscribed in something like the following from A

Woman Killed with Kindness: "Enter Master Frankford, as it were brushing the crumbs from his clothes with a napkin, as newly risen from supper". This, he demonstrates, is a common "short-hand device" in which a player enters "as from" a scene it would be difficult or costly to stage.

Dessen's other main argument is that theatrical action often created a series of what Walter Benjamin called "quoted gestures" to complement structures the author finds in the text. He would rehabilitate the "genre Astringer" who carries a message from Helena in V.1. of *All's Well*, arguing that this is not compositorial sophistication for "a gentle stranger" but a falconer (an astringer kept goshawks) designated on the stage by his carrying a hooded bird, an emblem of all those in the play who have eyes to see but see not and of Helena's hunting of Bertram. In line with this purpose, he defends the prevalence of violence in the plays on the grounds of symbolism: might we not remember not only the proto-naturalism that signified the shedding of blood by "a little bladder of vinegar, pricked" and, in the same play (*Camille*), a ludic fight for which there is the prescription: "Here let them fight with their staves, not come near one another by three or four yards"?

Michael Hattaway

Michael Hattaway is professor of English at the University of Sheffield.



A suitable return on investment

by T. E. H. Walker

Alvey is a cooperative programme and requires specific arrangements for handling intellectual property rights to ensure their availability to the appropriate across the programme. A consistent approach across the programme as a whole was needed; and it was important to reach agreement quickly so that all potential participants in Alvey should know the terms that would apply. This article sets out the current position and explains the background to the decisions.

It is sometimes thought that the only matter of substance is who owns the intellectual property rights, but this is not so. Of much more importance is who can use the intellectual property rights, and on what terms, and who receives the resulting income. In a programme designed to promote collaboration and for which the government provides a substantial part of the cost, there clearly has to be a means of making the results available to as many British companies and British research teams as practicable. On the other hand, participants in Alvey will bring considerable background to their research projects which may often be valuable in itself; industrial members will also be paying full their own costs. In both cases the value of their investment needs to be protected. To some extent this can only be achieved by restricting access to the intellectual property rights so as to provide a commercial advantage to those who can use it. A balance has to be struck, therefore, between a desire to secure the maximum dissemination of the results of Alvey and a desire to maximize the commercial advantage to Britain of those results.

These problems are not confined to industrial participants in Alvey. Academic institutions too want to get the best return for their involvement. They also want to be able to publish their results and to share their material with their peers. These legitimate desires, which may in themselves be difficult to reconcile, have also to be set against the equally reasonable needs of the industrial partners to exploit the results to the best advantage.

None of these problems are new, and many have been faced before by those likely to participate in Alvey. Nevertheless, it was important that the best balance possible between dissemination and exploitation, taking into account the level of government support and the particular needs of academic participants in Alvey. This had to be done in conjunction with the interested parties and a working group was set up to discuss possible solutions. The Electrical Engineering Association and Computing Services Association suggested representatives from industry and the Science and Engineering Research Council (SERC) attended for that part of the discussion concerned with universities.

Two issues had been resolved, however, before the working group met. First of these was ownership of the intellectual property rights created by Alvey. Given the general desire to maximize the exploitation of

the results, it was necessary to make clear who had the responsibility for doing this; clearly, this had to lie with industry. It was therefore decided that the industrial collaborators would own the intellectual property rights from Alvey but would have the corresponding responsibility for protecting and exploiting it, as well as for granting the necessary licences. In recognition of this, industry would have to make appropriate recompense to the academic institutions for their contribution.

It was also agreed that the Alvey Directorate should not seek to impose a standard collaboration agreement for all Alvey projects but should aim only to set the framework within which the individual participants would settle the details. This was the approach adopted by the European Strategic Programme for Research in Information Technology and generally the two programmes have very similar rules for intellectual property rights.

In fact the working group was able to reach agreement on a framework within three months, and this was published in the February issue of *Alvey News*. The key criteria were the need to make individual projects work, to prevent barriers to exploitation, and to facilitate the operation of the Alvey Clubs - all contributors working on projects within a particular Alvey Enabling Technology area - by providing for the dissemination of information. Generally, within a consortium we expect complete exchange of relevant information, both background and foreground; licensing of results and relevant background is compulsory, though not necessarily royalty-free; and within a club, there is an obligation not to withhold information unreasonably. Similarly, licences for other club members should not be withheld unreasonably, although normal commercial terms can be charged. This framework was endorsed by industry, the Department of Trade and Industry, the Ministry of Defence and the SERC.

The framework applies to the academic participants as well, and compliance with it is a condition of the SERC grant in the same way as it is a condition for industrial participation. Institutions will receive payment from their industrial collaborators for their contribution to the results, and the framework indicates the principles on which the return to SERC Cooperative Grant Scheme which suggests royalties of up to 2 per cent on manufactured products and about 15 per cent for software. However, this scheme is based on the assumption that the institution and the collaborating company each provide half the effort, taking all relevant factors into account, but this is rarely so for Alvey projects. These rates will have to be adjusted to take account of the relative contributions of all partners to the particular result. Thus, if an institution is responsible for about a tenth of a piece of software, it would receive a royalty of about 3 per cent. Clearly, where a number of academic institutions are involved in a project, each institution

will receive a royalty appropriate to its own contribution rather than to the total academic effort.

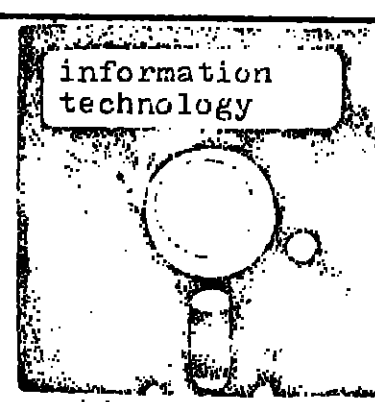
Universities will have the right to use the results to which they contribute for further research and, subject to any constraints of commercial confidentiality, we would expect all Alvey results to be made available to other academic members of the Alvey Club on a royalty-free basis. Publication is also encouraged, subject again to any requirements for commercial confidentiality.

We also had to consider the role of the British Technology Group (BTG). Since the responsibility for exploitation had already been given to the industrial participants, and the academic institutions would already themselves have to have detailed discussions with their collaborators on the division of work and confidentiality agreements, there seemed to be no point in requiring a third party to be involved in these negotiations. This view was reinforced by the Prime Minister's announcement last year that the BTG would no longer have the right of first refusal to intellectual

property rights generated by research council supported work. Following discussions with the SERC, it has now been agreed that academic institutions should be free to negotiate their own agreements with industry within the Alvey framework, although they are free to call on the BTG's services should they wish to do so. In a project for which there are no industrial collaborators - that is, those involving an industrial "uncle" - the present rules for SERC-supported research will still apply, although the BTG and the academic institutions will have the usual obligations to supply information and to grant licences as set out in the Alvey framework.

These arrangements are now being implemented by all concerned, and the individual participants are in the process of negotiating their collaboration agreements; indeed, in some cases the final versions have been produced. It is fair to say that it has been a learning experience for everyone. Industry has only just begun to participate in cooperative industrial research projects and in many cases has not always worked with academic institutions other than on a sub-contract basis. In Alvey, companies have to deal with the institutions on an equal basis, although the relationship has to reflect the different nature of the organizations involved. Similarly, many institutions do not have a long experience of negotiating these kind of agreements, if only because the responsibility for doing so has often been assigned to the BTG. They have to learn new skills, particularly in valuing the commercial work of ideas which may need considerable further development. They also must be able to deliver on any agreement which they enter into; for example, a university has to be certain that it has the power to assign ownership of intellectual property rights to industry and this may need some revision to contracts of employment for their staff.

What is most important, however, is that detailed arguments about what might happen in the future do not prevent cooperation from starting now. It would be a great disappointment to all concerned if individual projects were delayed unduly by haggling over future royalties. So far the



negotiations seem to be making progress, but if one partner seems to be acting unreasonably, it may be necessary for the Alvey Directorate to step in and impose a deadline by which time the collaboration agreement must be finalized or the project restructured or even dropped entirely. Certainly prolonged failure to produce a collaboration agreement might well indicate that the cooperation would not be effective. No projects have reached this stage yet, and I very much hope that good sense will prevail to avoid such an outcome; the Alvey Directorate is always prepared to help to resolve any disagreements of this kind or to explain in greater detail how the framework might operate in a particular case.

In any case, there is surely considerable advantage in making individual experiences more widely known, so that in future the wheel is not reinvented regularly. I intend therefore to organize a conference, on December 7th, where the whole subject can be debated. Sample collaboration agreements could be made available, and future projects would be able to draw on those. There may also be some general problems which it would be helpful to thrash out in more detail where a common approach adopted throughout Alvey would save protracted negotiations. I hope that this conference will provide a positive way to help everyone to reach agreement on these topics.

Dr Walker is Director of Administration at the Alvey Directorate, Department of Trade and Industry, London.

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HUMAN AND MACHINE VISION

Edited by Jacob Beck, Barbara Hope and Aerial Rosenfeld
1983, 584pp., 0.12.084320.X
\$43.00/\$10.00 (UK only)

Human and Machine Vision is a collection of papers spanning the fields of perceptual psychology and computer vision. Its purpose is to improve communications between researchers in the fields of human visual perception and machine vision by offering a discussion of visual problems of common interest to both fields, including representation, segmentation, organization, motion, and space.

MULTIFACETTED MODELLING AND DISCRETE EVENT SIMULATION

Bernard P. Zeigler
June 1984, 388pp., ISBN 0.12.778480.0
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This book develops a modelling methodology that supports the selection of appropriate partial views as well as their integration into a coherent whole. The author explores the formalism of discrete event systems and applies it to the design of computer bases for multifaceted modelling.

THE COMPUTER MODELLING OF MATHEMATICAL REASONING

Edited by Alan Bundy
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Paper: 0.12.141282.0 \$18.00/\$5.00 (UK only)

Based on existing courses at Edinburgh University, this book fills a niche hitherto ignored by the current textbooks on artificial intelligence. The heart of the text examines both theorems proving and non-theorem proving programs and relates these to mathematics and the process of doing mathematics. The text also discusses the techniques described, and provides, in the appendices, solutions to the problems found throughout the text.

DEVELOPMENTS IN EXPERT SYSTEMS

Edited by M.J. Coombs
October 1984, 272pp., 0.12.187980.6
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Expert systems, automated knowledge-based problem solvers, have been demonstrated in useful performance as diagnostic, control and planning aids in a wide range of domains. They have not, however, been widely adopted for routine use. The papers collected in this volume report current research to resolve some of the problems blocking more widespread use.

FUNDAMENTALS OF HUMAN COMPUTER INTERACTION

Edited by Andrew Monk
October 1984, 312pp., 0.12.604680.8
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As computer use becomes a more commonplace feature of our lives and as systems manufacturers vie with one another for a slice of the market, the acceptability, efficiency and attractiveness to the user of computer based systems assume crucial importance. The aim of this book is to share some of the knowledge acquired from research into Human Computer Interaction (HCI) with those at the sharp end of the design process; principally the systems engineers and programmers.

NEW APPLICATIONS OF DATA BASES

Edited by G. Gardarin and E. Gelenbe
1984, 282pp., 0.12.873580.2
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Based on the ICOD Workshop on New Applications of Data Bases, this work presents the findings of researchers who are actively investigating the representation of complex data oriented towards human interacting.

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The singer Adella Patil caricatured in 1880 as a cat spewing money into an impresario's hat. An illustration from *Prima Donna: a history* by Rupert Christiansen (Bodley Head, £15.00).

In the comfort of your own campus

by A. W. Bates

New technology has the potential not only to alter distance education radically but also conventional higher education. It could even lead (optimistically?) to the demise by the year 2000 of the conventional campus-based higher education as we know it. Instead of a system based on full-time attendance for three or four years for a select few between the ages of 18 to 24 on a large campus, people of all ages would be able to study at any period of their life through a mixture of home learning, study at work, and occasional visits to "old" campuses, whose primary function by then will be institutes for research, and for curriculum development. If such a scenario fails to materialize, it will not be because of technological or even financial limitations. The determining factors will be political and institutional.

For 2,000 years, from Socrates onwards, the main medium of teaching was the teacher in direct contact with the learner. Then the invention of the Gutenberg press had a profound impact not only on education but on all aspects of life. Neil Postman argues in *The Disappearance of Childhood* (1983) that our modern conception of childhood stems from the need to learn to read to become an adult. From this need grew the modern concept of schools and universities - institutions at which learners had to spend a good deal of their time to develop the skills needed in society, and above all, the skill of reading. However, books did not replace the teacher, but became a partner in education.

Equally, the development of modern communications technology is having a profound effect on both society

and schooling, although it is difficult for us, like *Fish in water*, to appreciate fully the effects. Postman argues that skills required for reading put political life on a rational and intellectual basis; television on the other hand is resulting in a more intuitive and impressionistic approach to politics. Issues are rarely debated at length; personality and impressions are more powerful determinants of voting behaviour than argument.

Television, however, has been with us for more than 30 years - long enough for its long-term effects to start to be appreciated. It has also been a relatively remote and peripheral part of the education system. The range of media available to teachers is rapidly expanding. Video and audio cassettes, cable and satellite television, videodata and teletext systems, and above all the microcomputer, between them provide a bewildering range of choices. Each has strengths and weaknesses, but in suitable combinations they can lead to radical changes in our education system. I want to take just three examples to show their potential for distance education.

Cable television and video-cassettes

There are several important features of cable television and video-cassettes which distinguish them from broadcasting and which hold promise for higher education. First, cable television is local. Teaching materials can be delivered off-campus to students within reasonable travelling distance of an institution, thus combining the flexibility of home or work-based study with less frequent but perhaps essential

visits to the campus. Cable distribution could also stimulate increased recruitment to an institution's courses.

Second, the rapidly growing home ownership of video-cassette recorders means that the disadvantage of broadcasts - their ephemerality, their lack of integrated study activities, the need to be in a fixed place at a fixed time - can be avoided. Third, video can provide unique learning resources in the students' home not easily available even on campus: rare experiments, field visits, case-studies, manufacturing processes, and so on. Fourth, production costs can be far less for cable television or video than broadcast production, particularly if production facilities already exist on campus. Fifth, cable allows for live interactive programmes, with students telephoning questions and participating in discussion "on air". And finally, materials can be shared, or coproduced, between different institutions, and distributed between cable systems via satellite links, on a European or even world-wide basis.

Computer conferencing

Using a cheap home microcomputer, a modem linking this to the telephone system, and a word-processing package costing around £50, a student can type up essays or leave messages or queries for a tutor. The information can be batched and sent down the telephone line in a burst (to save line costs) to be dumped on a mainframe computer. The tutor, also at home, can call up all the essays one by one from the mainframe on his own microcomputer, mark them and add comments or further work, and using a secure code-word, he can enter the grades against the students' files. If the tutor wishes, all students can access each other's essays and comments. Students can comment back to the tutor, or with each other, either before or after preparing their assignment. "Conversations" via the keyboard can be had in real time via the computer, or messages or queries left by students or tutors to be "collected" when convenient. No computer skills are required - just a list of codes to identify students and tutors, and commands to choose functions. The software which provides this facility can be bought "off-the-shelf" for £6,000, and can handle up to 200 simultaneous connections, depending on the mainframe capabilities.

Computer-based audio-graphic systems

It is now possible to use standard, low-cost microcomputers to design teaching materials which combine graphics with the teacher's voice, without requiring any computer programming skills. The system consists of a standard microcomputer, a stereo audio-cassette recorder, a light-pen, and a software package in the form of a microchip. This enables a teacher, using the light-pen, to draw diagrams in colour on the television screen, to type and move words using the micro-keyboard, to edit frames via the computer using a menu of commands, and to provide his or her own commentary, synchronized with the graphics via the stereo cassette recorder. The video pictures are converted into sound signals by the microcomputer, and can then be stored on the second track of the audio-cassette, for use in an independent learning mode.

Alternatively, the system can be used in real time for distance tutoring. Because the video pictures have been converted to sound signals, these can be sent down a standard telephone line and decoded back into graphics on a television screen at the other end. Using standard telephone conferencing facilities, and two lines, one for sound and one for graphics, a teacher can run a tutorial with up to six distant students. Each student and teacher can see or alter what is on the screen and hear each other.

The Open University version of this system, called CYCLOPS, ran successfully in the distance teaching mode in 18 centres for three years, and the independent study mode has also been successfully piloted in schools. The key point is that teachers can now create their own audio-visual materials, using their natural (rather than synthesized) voice without the need for computer programming skills (although some practice and training is desirable).

These are just three examples. The significant points about these and other emerging technologies is that they are easy to use by teachers; they are relatively inexpensive to develop and use; they use technology which is becoming readily accessible in people's homes; they leave the individual teacher in full control of the teaching

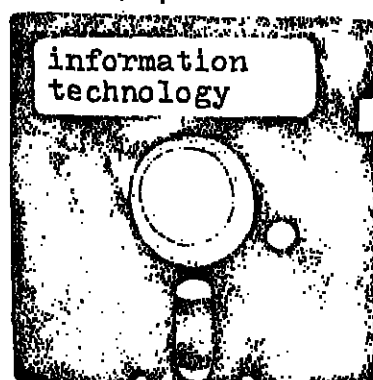


Recording radio programmes for distribution to the community.

process; and above all they allow the learner to interact with the technology, so that learning remains an active process, but at the convenience of the learner.

A major obstacle to the development of distance education has been the need to set up large specialist institutions (such as the Open University) with high starting costs. However, these new technologies now offer the possibility of an alternative model to the large, centralized, specialist system, requiring sophisticated learning packages designed by large course teams.

New communications technology will enable existing conventional educational institutions to expand into off-campus teaching at relatively low cost, using either on-campus staff, or more interestingly, specialists from industry or the public sector. The role of a higher education institution could therefore become that of providing a communications system which allows for a combination of on-campus and off-campus teaching, and through which tutors, students and administrators can communicate with each other.



Perhaps the most valuable aspect of such developments, however, is the potential for economies of scale. Already, for instance, the Open University could handle many more students without extra cost to the Exchequer, since the student fee now more or less covers the cost of adding one more student to already existing courses. Well-designed systems should thus enable many more students to be handled at the same cost, without lowering of standards.

The technology, by and large, is not the problem. However, for it to be successfully introduced and used in a cost-effective way, major changes in political and institutional attitudes are needed. Most distance education - including Open Tech initiatives - is still primarily print-based and tutor-based. The one institution already well placed to capitalize on these new technologies - the Open University - is in serious financial difficulties and is trying to contract its activities rather than expand. Technologically-based education will require some investment. It will need more than rhetorical statements of support from Ministers and senior

decision-makers. For instance, despite the University Grants Committee's recent submission to the government on continuing education, it does not apparently intend to seek more money for such activities.

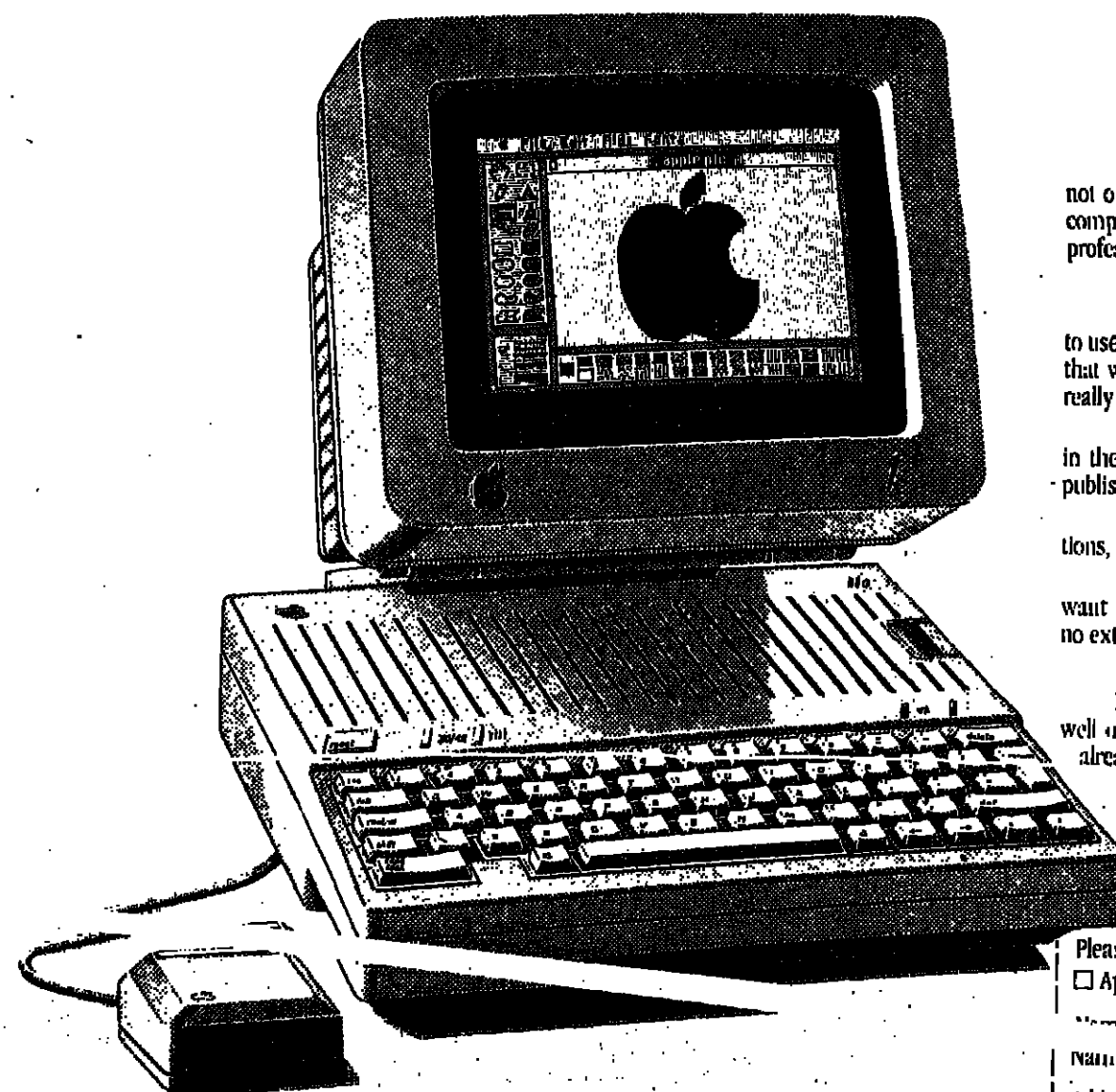
The main barrier, however, is the inability of large institutions to carry through the fundamental changes in organization, financial arrangements and teaching strategies that are essential if flexible off-campus teaching is to be achieved. A coherent financial system which accepts off-campus teaching as an essential cost, and the ability to treat the costs of off-campus teaching as an integral part of undergraduate teaching, are essential. There is a need for a major training programme on the selection and use of communications technologies for existing academic and administrative staff, who also need to understand these technologies. This does not mean courses in computer programming, but increasing awareness of the functions of the various technologies, their costs, and organizational requirements, with suitable technical support for users of these new technologies. There is a need to protect and expand the provision of advice by educational technologists on curriculum design and teaching within institutions, and finally a need to integrate administrative and teaching computing systems, so that all communications regarding fees, enrolment, examinations and teaching can be handled by the same system.

Even with pump-priming, there is unlikely to be a substantial increase in funding for distance teaching activities in the current financial and political climate. This means changing priorities and current, frankly inefficient, on-campus teaching practices to release resources for new developments, and much greater use of "off-the-shelf" software and courseware.

If all this sounds like a lot of effort, it is salutary to consider the consequences of not doing this. The need to up-date engineers, businessmen, managers, and so on, throughout their working life will not go away if higher education institutions ignore it. New technologies such as computer conferencing do not need campus-based institutions. Already a private entrepreneur in the United States has set up the "electronic university" - basically an agency which puts people in need of professional up-dating with specialists in the field. The specialist is paid a fee, and the "electronic university" provides the facilities required for the teaching. The dangers of such practices are obvious, but nature abhors a vacuum, and failure by conventional institutions to respond imaginatively and positively to the new technologies will result in their increasing isolation from society.

A.W. Bates is reader in media research methods at the Open University, editor of *The Role of Technology in Distance Education* (Croom Helm, 1984), and author of *Broadcasting in Education: an evaluation* (Constable, 1984).

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WHEN IT COMES TO EDUCATION, APPLE MEANS BUSINESS.



A combination of skills

by Nick Rushby

Only two or three years ago, a progress report on most computer-based training (CBT) might well have said "shows promise; could do better". The tone of articles on the state of the art of CBT was sometimes scathing but more often euphoric, extolling the benefits that would come to those with the foresight and skill to make effective use of it.

Now that the medium has reached adolescence, if not maturity, we find rather different characteristics. The picture is one of quiet consolidation rather than spectacular growth. In the background we can see the need for a better infrastructure: more training about CBT for trainers, the search for a forum for the expanding CBT community, and the need for impartial information about CBT. And round the edges, confusing our view, is the introduction of new technologies which pose questions about where CBT starts and finishes.

Several surveys were carried out in Britain during the period 1978/81 which showed a steady growth in the number of organizations using or investigating CBT. A major study undertaken on behalf of the Manpower Services Commission in 1978 discovered only 32 users: in 1980 a follow-up study found nearly 90. Since that time, the growth has been such that it is very difficult to make an accurate estimate of the number of organizations using or seriously looking at CBT. One estimate, based on the number of inquiries to Computers in Education as a Resource (CEDAR) at Imperial College, London, puts the number in excess of 1,000.

There are well-known large users in finance (for example, Barclaycard and the National Westminster Bank), in the motor industry (Ford and Austin Rover), in service industries (British

Telecom, British Airways, and British Gas), and in several government departments (for example, the Department of Health and Social Security). The computer industry is also making extensive use of CBT, but this is an obvious application in an environment where it might be expected to flourish. The wide range of subject areas includes clerical and procedural training, product knowledge for sales and support staff, fault finding, management training and, at last, some interpersonal skills training.

With this increase in numbers, there is a welcome maturity in approach. Whereas in the early 1980s many users saw CBT as a technological fix (whatever the training problem, the best answer is a computer), there is now a more critical appraisal of its strengths and weaknesses, resulting in more appropriate use so that CBT is finding its place in a broader mix of training media. The impact of personal computers has caused a dramatic fall in the entry costs of CBT. We are now in a position where the costs of human resources dominate the overall cost of training and make machine-mediated learning potentially attractive. Given that the necessary hardware can be acquired for as little as £1,000, more organizations are prepared to invest in pilot studies to determine the cost-effectiveness for their applications. However, increasing staff costs have also added to the costs of producing training packages and have resulted in a growing interest in CBT authoring systems.

During the past four years there has been a marked trend away from writing CBT materials in general-purpose languages like Basic or Pascal, in favour of specialized systems such as Microtext, PASS, Mentor and scores of others. But most of these systems

are far from ideal and much of the contemporary courseware is constrained and disappointing because of their apparent limitations. We should be driven by our training needs and not by the technology: able to work from the premise that anything the trainer wants to do is possible - rather than from the limitations of the language. To overcome this, we need more awareness about CBT and more emphasis on training technology. But perhaps we should not be too surprised and disenchanted by this shortcoming: measured by the timescales of change in training, CBT has only been around for a very short time. Perhaps we are expecting too much too soon. But even if we are, it is no excuse for complacency, for the training world will not wait very much longer for the promise of CBT to be matched by its performance.

One of the consequences of this rapid growth is that CBT has outstripped the infrastructure needed to support it. The current generation of trainers (like the current generation of teachers) have never been exposed to CBT as learners, and so may encounter difficulties in making informed decisions about whether, when and how to use it in their courses. Initiatives by the Manpower Services Commission during the past two years have resulted in some courses for training CBT specialists (for example, Datasolve's Project Author) but there is also a need for the majority trainers to know the same things about CBT that they currently know about other media such as the overhead projector and video (some cynics would also maintain that most trainers know very little about these either).

We cannot underestimate the magnitude of this training problem. There are some 500,000 people involved in training in Britain (the precise figure depends on who qualifies as a "trainer") with a significant annual turnover, so that the numbers needing some basic training in CBT run into tens of thousands each year. The current training programmes, catering for a few hundreds, can only scratch the surface of this demand.

In part, the training problem is being addressed by an increasing number of conferences, some devoted specifically to computer-based learning and training (for example, CAL '85 in Nottingham in April, 1985) and others looking more generally at the use of machine-mediated learning (for example, Brintex's "New Technologies in Training" in October, 1984; Educational Technology International Conference in London in April, 1985). A CAL/CBT community has also been established. The National Computing Centre has set up a "forum" which looks specifically at CBT and interactive video. The wider perspective of training technology is covered by the Association for Educational and Training Technology (AETT) which holds an annual conference and publishes a quarterly journal (PLET) (incorporating CAL News - a newsletter covering CBT as well as CAL). The wider view of CBT and its role in training is reflected in the theme of its next conference: "Education, Training and Information Technology: economics and other realities". It will examine the interactions between advanced information technologies - CBT, interactive video, artificial intelligence (AI), intelligent knowledge-based expert systems, tele-video-conferencing, information retrieval, and so on - which are a matter of current concern to the practicing trainer. Some other professional associations (for example, the Institute of Training and Development) are also interested in CBT but are not, as yet, very active.

With the demise of CEDAR at Imperial College, it is not clear where users or potential users of CBT can go for impartial advice and to discover what hardware, software and courseware is available.

Starting in 1978, CEDAR was supported by the Council for Educational Technology, the Manpower Services Commission, the Computer Board, the Microelectronics Education Programme and the Scottish Microelectronics Development Programme, to provide a national information service on the use of computers in education and training. When it ended in the summer of 1984 as a result of changes in the direction of some of its sponsors, the unit was responding to some 2,000 inquiries a year, coming in by post, telephone and personal visitors. About 25 per cent of these were concerned with training applications, ranging from the availability of packages to teach specific skills, through the selection of authoring systems, to counselling on the problems of introducing CBT into the

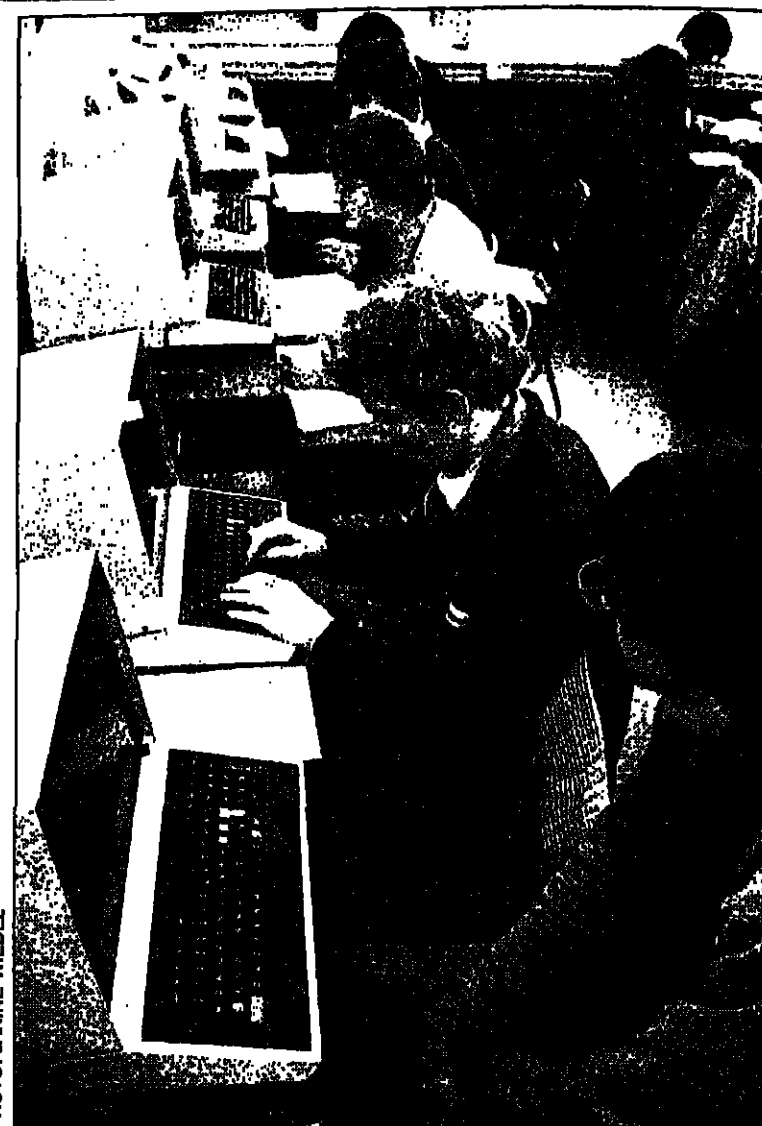
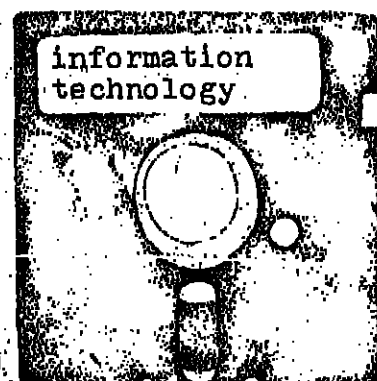


PHOTO: JANINE WIDDEL

training organization. Perhaps the challenge of providing an effective service should now be taken up by one of the other information providing organizations such as the British Association for Commercial and Industrial Education or the Manpower Services Commission's Materials and Resources Information Service.

Users have found that CBT imposes an unfamiliar discipline on the production of training materials. For many of them the systems approach is no longer a mechanistic academic ideal but a necessity, and the resulting training materials - regardless of the medium used to deliver them - are the better for it. One of the lessons which has been learnt is that the production of effective, high quality CBT courseware requires a blend of skills including a knowledge of the strengths and weaknesses of CBT and other media, of graphic design and the layout of instructional materials, of the design, programming, validation and documentation of computer software, and of the evaluation of training materials.



This interdisciplinary approach is behind the research...

The amalgamation of the Centre for Staff Development in Higher Education at the University of London and Computers in Training as a Resource (CITAR). The centre runs an active programme of courses for training in commerce and industry as well as for teaching and administrative staff in higher education, while CITAR has an established reputation in the area of new technology in training. The merger has brought together the complementary skills of both groups and will enable them to broaden and strengthen their training and consultancy activities. With specialist expertise in training technology and CBT, and support in the areas of programming, video production and micro-traditional audio-visual media, such a group is well equipped to design and develop materials that exploit the strengths of all these media and methods, by using them in appropriate

combination.

The state of the art of CBT is confused by the introduction of new technologies such as interactive video and, less obviously, AI. Trainers are faced with the choice of starting to use "traditional" CBT (it is significant that we can now use such a term) and then progressing, if they want to, to the new challenge of adding video controlled by computer - or of moving directly to interactive video. While some people regard interactive video as a way of re-sequencing and controlling video with the aid of a computer, others, and in particular the CBT community, perceive it as an extension to CBT - as a way of adding very high quality, animated graphics and filmic images to their CBT sequences. The reality is that interactive video is a medium in its own right, demonstrating that the integrated whole is greater than the sum of its parts. History may show, as many of its proponents think it will, that interactive video will be the main evolutionary line and that CBT will be perceived merely as a sterile side branch.

The full impact of artificial intelligence tools and techniques on CBT has yet to be felt. During the past two years, the tools for developing expert systems, which can not only help in decision making, but can also explain and teach how they came to those decisions, have come out of the research laboratory and are available in the training classroom. Other AI-based systems can be adapted to the learning strategies of individual trainees to a much greater extent than the traditional, programmed learning materials that we see today. So far, few trainers have been able to take advantage of them. Again, there are the problems of training the trainers and a dearth of off-the-shelf...

...their courseware. Predictions about the spread of new technologies are uncertain things, but it seems likely that within the next two or three years, interactive video and AI will radically change the shape of CBT as we know it today. Perhaps we should start to drop the term CBT and talk instead of new technologies in training. This would certainly be in accord with the long-term aim of integrating CBT into training technology and might help to overcome the mismatch between the rapid advances in the use of new technologies in training and the slower development of the technology of training itself.

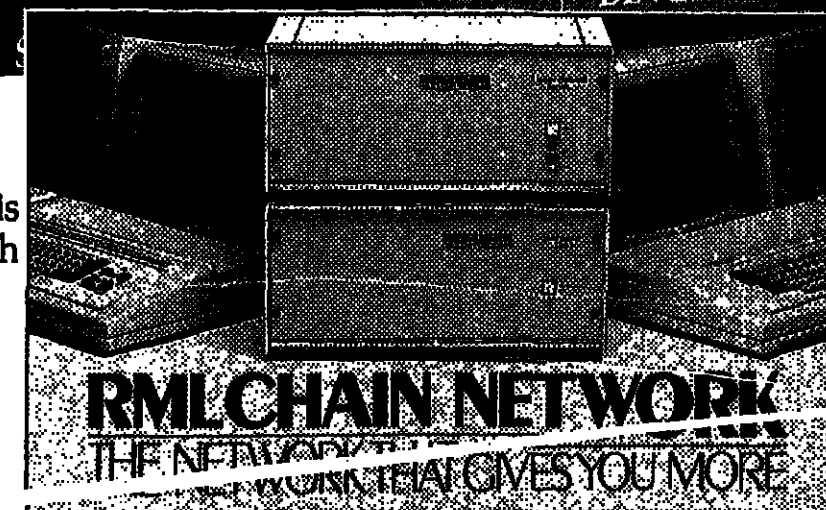
Nick Rushby is at the Centre for Staff Development in Higher Education, and Institute of Education, London, and conference secretary to the 1985 Educational Technology International Conference to be held at Imperial College, London, from April 1 to 3, 1985.

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At the touch of a switch

by Lyndon A. Thomas

Microelectronics has the potential to make enormous improvements to the quality of life for many disabled people, and yet we are failing to make the technology available to all but a few of those who can benefit.

I recently met a student who, in spite of being blind and deaf, is studying computer science at university. In order to follow lectures he requires someone to type a summary of what is being said. As the summary is being typed, it is automatically translated into Braille for him to follow while the lecture is in progress. He is able to "read" his textbooks with the aid of an "Optacon", a device which consists of a read head, containing a matrix of light detectors and a matrix of vibrating pins. When the head is placed over a section of print the pins vibrate in the same pattern as the image under the read head. Using this device the student is not only able to read text from books, but he is also able to follow diagrams and read data directly off a computer screen. This student demonstrates what can be achieved if existing technology is properly applied. But he is not typical: he is one of the technological elite who are benefiting from the new technology.

Although there can be no doubt that the microcomputer is capable of helping many people who at the moment have a very limited ability to communicate, we are failing in two major ways. First, we are not systematically providing the technology to all those who may benefit from it; and second, in many cases we are failing to provide the necessary training and ancillary services to ensure that maximum benefit is gained when those devices are provided. The problem of making the technology available to those who might benefit from it is being tackled by educationists, occupational therapists, social workers, speech therapists, research workers, and others in a number of research establishments and many others, in a largely uncoordinated manner. Rehabilitation of the disabled adult is therefore often an unpredictable affair. In contrast, the use of microelectronics in schools dealing with children with special needs is extremely well organized, thanks to the excellent work of the Special Education Microelectronics Resource Centres set up by the Council for Educational Technology.

In some areas we can see information technology being used to the benefit of a large group of handicapped people. On a recent trip to the United States, I was able to communicate directly with Republic Airlines, using the telephone, without having to be able to hear anything. I did this by making use of a pocket-sized keyboard and display and a service called Telecommunication Devices for the Deaf (TDD). Republic Airlines, like many other companies in the United States, have installed their own TDD terminal. For a deaf person this service means that they are never isolated from other people travelling who are able to keep in touch with friends, travel agents, airlines and anyone else who chooses to provide the TDD service.

In Britain the Royal National Institute for the Deaf (RNID) decided not to introduce a similar service until the technology stabilized. It now looks as though that decision was well founded. The RNID has recently introduced a bureau service that allows deaf people to communicate with any hearing person over the telephone. The hearing person does not require any special equipment. In this case a deaf person communicates with the RNID bureau using a terminal. At the same time, the bureau can be talking to the hearing person, relay messages between the two people. Because we have waited before implementing this service, the RNID has been able to make use of the latest, Protel equipment. Since Protel is not used solely by the deaf, the cost of equipment will be much lower than if it had to be specially made. Also, the same equipment can be used to communicate with other services, such as Protel itself and the British Telecom Gold (electronic mail) system.

Another service for deaf people in the United States and in Britain is the handling of television programmes. Against the Americans jumped in

quickly and developed a system specially for the deaf. In this country, we waited until Ceefax or Oracle were available, and now provide subtitles as part of a much wider service. Again, this has helped to reduce the cost of the hardware needed to make use of this service.

Deaf people are not the only people to benefit from the introduction of microelectronics. Almost any disabled person, whatever their disability, can now operate a computer. All that is required is that they should be able to operate a single switch. To achieve this they must have some movement which is under their volitional control: the ability to move an arm or leg, blow into a tube, move the eyes, blink, and so on. A few years ago, researchers were writing programs for disabled children who were able to operate single switches. Although such programs often had an immediate beneficial impact on the children for whom they were intended, it was soon realised that it was not possible to provide enough software to meet the educational needs of all physically handicapped children. Indeed, it became clear that physically handicapped people should be able to use all commercially available software. Researchers therefore set about developing "alternative keyboards", the main requirement of which was that (from the computer's point of view) anything typed on the alternative keyboard should be indistinguishable from something typed on the computer's own keyboard. Also, any operation which could be carried out on the computer's own keyboard should be possible on the alternative keyboard. A wide range of such alternative keyboards is now available. Some only require the person to be able to operate a single switch, or pair of switches, and use a row/column

scanning principle. (Typically, the computer keyboard is displayed on a dedicated monitor. Columns of keys are illuminated in turn until the user operates his switch. Each key in the selected column is then illuminated in turn until the switch is operated a second time. The selected key is then "pressed" on the computer by an alternative keyboard.) Others are simply large versions of the computer's own keyboard with finger guards fitted to help the user press only the required keys.

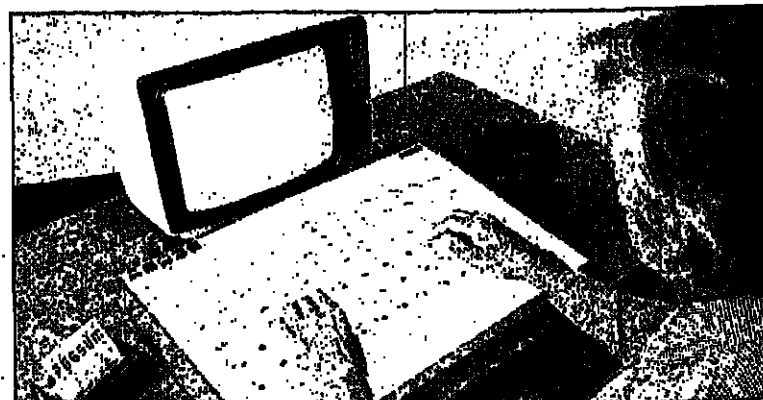
Until recently, most alternative keyboards could only be used with the computer for which they were originally designed. Now, thanks to the Trace Center of the University of Wisconsin, a set of international standards is being proposed which will mean that there will be a measure of compatibility between alternative keyboards. Thus, having mastered one alternative keyboard, a user could use the same device with any of the popular computers. Moreover, the range of available alternative keyboards will be greatly increased, so that the chances of finding a suitable device for a given individual will also be increased. A range of Trace Center compatible alternative keyboards is soon to be marketed by Clwyd Technics Ltd.

The use of a single switch, or pair of switches, is laborious, but other types of alternative keyboards are being developed which will allow some users to type more quickly. A number of trials have been successfully carried out using speech to control such a keyboard. Typically the user is required to say the name of the key that

he wishes to press, and the alternative keyboard "presses" the appropriate key for him. Other systems now being made available show the user a picture of the keyboard and allow him to select a key simply by looking at the key required. Such systems are still expensive and suffer from the disadvantage that the user usually must hold his or her head fairly steady. An alternative, much cheaper, system has been developed for people who have good control of their head position. A remote light pen is fastened to the user's head, and the user, by moving his or her head, selects a character by pointing to it on a display. One example of such a device is the Photonic Wand developed by Dr John Coles.

For blind and partially sighted people, one of the most exciting developments has been the talking computer. Dr Tom Vincent has been using speech synthesizers to help visually handicapped students to study computer programming at the Open University. The speech synthesizer is used to let the student check his typing, and also to listen to the results of running a program. In effect, the speech unit is used to "read aloud" everything that appears on the computer screen. Dr Vincent and his team have also developed a talking word-processor that allows visually handicapped students to type either in Braille or on the normal keyboard. The computer can "read back" selected portions of the text. Material typed in Braille can be printed on an ordinary printer for reading by a sighted person. A variety of Braille output devices are available: some produce a single line of Braille which can be updated at any time; others produce pages of embossed Braille and are used when permanent copy is required.

Blind people have been using talking machines, capable of reading pages of a book, for some time. However, the cost of these machines has meant that only institutions could afford them. A British company has recently announced a new product which will reduce the cost of such readers. Over-International have developed a low cost reader for converting printed text into a form suitable for transmitting to a computer or directly to a speech



Possum ZX Spectrum with expanded keyboard control.

synthesizer. This means that for about £800 a blind person can obtain hardware capable of reading aloud a typed page. The reader is sold with the ability to handle four typefaces, but it is capable of being "taught" to recognize additional typefaces as well.

Specific problems such as deafness and blindness are well catered for by organizations such as the RNID and the Royal National Institute for the Blind. What is required is an organization which will bring together all relevant developments, and make them available to all people who could benefit. I believe that in this area we can learn a great deal from the United States, where vocational rehabilitation units have been set up. These units take any disabled adults, evaluate their strengths and weaknesses, provide aids required, train them to use these skills for them to become employable. They then attempt to place these people in suitable employment. These centres are in a good position to view a person as a whole, since they are not set up specifically to deal with any particular handicap.

Microelectronics is providing the tools to allow disabled people to live more independent lives and become more useful members of society. They can therefore acquire a dignity that would not have been possible before the advent of the microcomputer. Our job is to ensure that the right tools reach the right people.

Lyndon A. Thomas is reader in microelectronics at the North-East Wales Institute of Higher Education, Coed House, Kilserton Road, Flint, Clwyd.

All manner of means

by Geoffrey Hubbard

1978, the year of the BBC's *Horizon* programme "Now the Chips are Down", is usually taken as the start of the information technology age. Britain, only six years down the road, the world about us looks relatively unchanged, yet there are enough indicators, of one sort or another, to confirm that significant change is underway. This is markedly the case in the field of education and training.

In higher education, however, the strong influence of the structure of disciplines has limited the change. Information technology - the combining of information handling, information transmission and information transformation - has been seen primarily as the concern of physicists, who develop the techniques of microcircuits and fibre optics and so on, computer scientists who create the computer systems and the software that drives them, and information scientists who are concerned with the study of information and communications systems. Then, in practically every discipline, there are applications: the technology becomes a tool, like the books in the library or the equipment in the laboratory, in the service of the discipline. In this way, increasing numbers of students gain experience of information technology through using, in the course of their work, computers as mathematical manipulators, as modelling devices, as information stores. The role of information technology as a learning medium, a system through which the student learns rather than a tool he uses in a traditional learning mode, is seen as the preserve of education, and has had, certainly compared with the school sector and industrial training, comparatively little influence on how students are taught.

This article is intended to explore the potential of information technology in teaching and learning in higher education, particularly in terms of radically different systems, and to explore the implications for the existing structures. Information technology has three elements. The exceptional power and wide-ranging influence of the technology comes from their combination, and this in turn is dependent on the devices and techniques which they share. Thus, in information handling the storage and retrieval is undertaken in computers, often very large computers. These can be interrogated through the telephone network, which will increasingly use digital exchanges and fibre optics, and will certainly, if the distance is great enough, use satellite communication. The user's terminal is increasingly not a special device, but a general-purpose microcomputer. The link-up is facilitated by the fact that all the devices in the chain communicate in digital code, though instructed by our human facility for creating incomprehensible out of the fundamentally comprehensible consequences, I fear, of *Genesis* 11, 7. The range of devices is in fact simplifying, as more and more we approach the position where the necessary equipment for the whole relevant range of functions can be packed into three or four boxes: for example, the "modem" needed to link the computer to the telephone system is incorporated in the microcomputer, rather than looked out as another, separate black box with trailing wires. Indeed the "learning station of tomorrow" can be bought today - a microcomputer capable of direct connection to the telephone system, a printer, a videodisk, and run off one electrical socket. The problem is an almost total lack of software that would enable a student with such a set-up to do any useful learning.

But how could it be used? Essentially, of course, for students learning, rather than for teachers teaching, the technology is interactive and adapted particularly to independent learning. Not necessarily, however, to individualized learning, as it may often be more effective for students to work in small groups. But whether individually or in small groups, the student might be engaged in:

(1) Changing their learning - getting information about their work programme and timetable.

(2) Sending and receiving messages from their tutors, or from other students - through electronic mail or by audio- or video-conferencing.

(3) Obtaining printed material or computer programs - through the telephone network by "telesoftware".

(4) Consulting, or obtaining data from, a database which may call up visual images and sequences from a videodisk.

(5) Consulting papers published through an electronic publishing system.

(6) Working through a unit of computer-assisted learning which may involve visual or audio sequences stored on a videodisk and called up as appropriate by the computer program (interactive video).

(7) Building, or running, a model or simulation.

(8) Writing or running a program as part of a project.

(9) Writing essays or reports on a word-processing system.

(10) Doing tests and assessments.

We tend to look on such lists as the work of visionary adherents of the technological imperative: yes, such things could be, but why should they be, and nobody does them anyway. The Council for Educational Technology recently put together a presentation based on schools applications of information technology. We modelled a pupil's day in a school where all the potential applications of information technology were applied, each one being based on an application known to us in one or more schools today. It is all happening somewhere, though not all in the same place. The Open University and the many foreign systems modelled on it or inspired by it and the Open Tech and the range of correspondence courses at various levels and of various degrees of sophistication all over the world, while using nothing more advanced than print, postal services, broadcasting and the occasional telephone call, have established that students can learn through less orthodox methods. From these same examples we know that the effectiveness of learning depends on good motivation (as always), but more so if the student is isolated and on carefully developed courses; not simply the material but also the structure, the arrangements for tutoring and support, and so on.

If these lessons are applied to the development of courses utilizing information technology, they should be effective. In today's Wildean economic climate, where we know the price

of everything and the value of nothing, presumably the question will be asked whether this will be a cheaper method. It is a simple and suspect question, the answer to which depends on how you evaluate outputs, and on the number of students over whom the investment costs can be spread, for it is course development costs, not hardware costs, that are significant. But much more important is the impact on students, the way of learning they prefer and the way in which they learn most readily.

Clearly these methods could be used in a normal institutional environment. They could be applied to the teaching of students living-in, but would allow the same courses to be offered to students who were non-resident, whether within range of the institution or not. However, this opens up some interesting possibilities. The equipment we have postulated is in many homes and will be in more - microcomputers now, videodisk players in a few years time - for we seem to be conditioned to the regular purchase of electronic equipment. Could not the student then choose his or her learning from a range of institutions, in this

country and abroad, and possibly not all of them educational?

We have already the example of American colleges offering videorecorded courses in this country, and we could well see more complex packages available. Something like the old external degree system could also develop as institutions look to non-resident students to increase the return on the investment in courses initially designed for the full-time student. But while the student who needs a degree or other specific qualification may have no additional freedom beyond the possibility of shopping around the institutions which alone can confer the qualification, those who merely want to learn and do not require paper qualifications may have a very different option. They could start with a learning needs diagnostic programme - in effect an educational consultancy service - and could proceed to construct a programme of work tailored to their own specific requirements. They might draw on material from many sources, and if there are needs which can be met from the institutions, we can be sure that commercial providers will emerge.

Geoffrey Hubbard is Director of the Council for Educational Technology.

enabling more organizations to install their own in-house COM recorder. COM is used to disseminate library catalogues, statistical reference works, automotive and other technical parts manuals, financial statistics in the banking and insurance sector and a host of other applications where vast amounts of data need to be disseminated quickly and cheaply. In addition to pure data processing applications, computer-assisted design output can now be plotted directly onto microfilm using specially designed COM recorders, and word processing output can also be archived on microfilm using COM. Last year saw the launch of a low-cost COM recorder (selling for under £20,000) aimed at users of minicomputer and shared logic word processing systems. And it is expected that this will be followed by a number of similar low-cost COM recorders, opening up the market for in-house COM systems to medium-sized organizations as well as the traditional big COM users.

CAR systems use microfilm as a cheap way of capturing and storing incoming documents (correspondence, invoices, trade literature, reports, articles, and so on) and use the computer to create, maintain, manipulate and search an index to the file of documents. In many systems, too, the microfilm is stored in an automatic

retrieval unit which is linked to and controlled by the computer. In these systems the relevant document images can be retrieved and displayed/printed out automatically. CAR systems are in existence which are based around microfiche, aperture cards, 16-millimetre roll film, and even high-density ultrastrips - the choice of format being governed by the type of documents to be captured, the budget of the user organization and the speed of retrieval required. They are in use in technical libraries, accounts departments, personnel departments, hospital record systems, student record systems, and a whole range of other applications.

One example of a CAR system is the Kodak 4000 system, a powerful turnkey CAR system which was launched in Britain last year at the International Business Show. The user is offered a choice of high-speed rotary cameras or versatile planetary cameras for input - the choice being determined by the type of documents to be filmed. Small, standard documents such as cheques, invoices, and so on, can be filmed automatically on a rotary camera at

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In the piracy of their own homes

by Jim Stevenson

One characteristic of "new" information technology is that it is rapidly becoming "old" information technology. Some of it has been around for a decade or more and some has reached high penetration points in homes, schools and - in the case of the Walkman - into pockets. It has often been said that new technology in education cannot alone solve educational problems nor can it replace or undermine good face-to-face tuition. However, it can and does provide teachers and learners, both adults and children, with new resources; and in some cases it can quite dramatically enhance the enjoyment of discovery and it can open doors of understanding and delight.

For educational broadcasters the most significant development in the past five years has been the rapid spread of video. With 30 per cent of homes now equipped and virtually all secondary schools possessing at least three video-cassette recorders, the ephemeral nature of the medium has been to some extent removed and its value as a learning resource thereby increased. Schools bank often quite sizeable libraries of cassettes for use by teachers at the time of their choice. And the time-shifting of programmes by individuals is commonplace, viewing, as one BBC wit has put it, "in the piracy of their own homes". To use programmes about, for example, natural history, Chinese cooking, and foreign languages is a different educational experience using the stop/start button to that of relying only on the moment of transmission. The television medium in its video mode has been transformed in Marshall McLuhan's terms from "cool" to "hot". The

message within the medium has become greatly more retrievable and accessible; the responsibility for pace and scheduling has to some extent been transferred from the teacher to the learner.

This transformation of a medium was probably most dramatically seen with radio in the Open University where, in the early 1970s, a substantial part of the radio output was more for enrichment than for direct teaching. In this it often seemed to fail particularly in the areas of mathematics and science. But the production of highly crafted audio-cassettes coupled in many cases with the simultaneous use of print - for example, diagrams and equations - moved the medium from the educational periphery of the Open University to the centre of the stage. The extent of this transformation was such that many students regarded "audio" as the most useful component on a number of courses.

A parallel transformation of educational television is more difficult to achieve and is possibly less educationally viable. Certainly it is easy to imagine highly structured video with pauses for group discussion or other activity, but there are few examples outside mathematics and language teaching. It is also a mistake to generalize, as some writers have done, from the Open University's experience of audio, with highly motivated adult learners working alone, to classroom-based educational television or even to people learning casually in their own homes. Classroom reality can militate against stop/start audio and video. With only an average of three video-cassette recorders per secondary school with perhaps a thousand pupils,

television is still a relatively rare teaching resource and to tie up a playback system for a whole lesson and perhaps use only one five-minute programme segment might be regarded as wasteful. In many schools the equipment is held in isolation well away from other resources and the viewing of a programme is, for many classes, more of an "event" than a fully integrated educational experience. Until videos reach perhaps ten times their present numbers in schools, the dream of self-instruction and the flexible use of video in classroom corners will remain mainly theory.

So whether it is adults alone or in groups or children at home or in classes, it is the learning environment which counts and to which the producer has to address his or her production strategy if the full potential of the new video and audio technologies are to be realized.

If video in homes and schools is one story then the microcomputer and its peripherals is quite a different one. Undoubtedly, much of the current fascination for microcomputers and the quite staggering penetration of the hardware in Britain was boosted by television and particularly by the BBC's Computer Literacy project. There are an estimated 3.5 million microcomputers in Britain: 98 per cent of schools have at least one (the average is nine per secondary school and two per primary school). More than half of these run courses on computing: over 60 per cent have computer clubs and nearly half of all teenagers have access to a computer in their own homes. A bewildering quantity of software is now in circulation - available from many sources including transmission over the air as tele-software and radio-software.

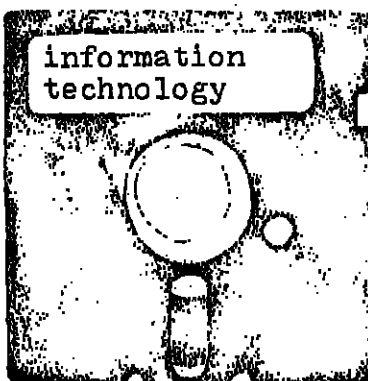
As with video, however, the penetration of the microcomputer into schools - though rapid - is still tiny. Seymour Papert, in his fascinating work with young children exploring mathematical concepts using the computer language LOGO, has certainly opened a door on the traditional numeracy problem as well as on the way people learn. But the effective application of such work demands a very high school density of computers. Self-instruction, drill and practice with a one-to-one or even one-to-five pupil/computer ratio is impossible in most schools and the reality is often a locked "computer room" with the hardware nailed to the table tops.

It is not surprising then that with such unavailability and lack of awareness of what the machine can do, many see the microcomputer in the classroom as limited. There have been disappoint-

ments as reality has slid over the first dream. There is much "so what?" software which would hardly be acceptable educationally in Dethlefsen Hall. Some software is unattractive visually. Some is full of frustrating blind alleys. Some has "bugs" which the unskilled operator cannot remove. It is often quite expensive. There is an urgent need for the rapid development not only of attractive and effective software packages but a continuing debate about what microcomputers are for and where the key future applications lie.

The home computer, however, is quite a different kettle of fish. There, people have time to play and learn to program. The computer can grow through peripherals into control consoles, word-processors and linked terminals. Undoubtedly, the major use is still for playing games, but this may be no bad thing at this early stage. Such games often demand great skill; they are gloriously entertaining and for those who need to be calmed they have a mind-wiping capacity to smooth the end of a hard day. As word-processors, microcomputers are transforming many writers' capacity for work and creativity. As adjuncts to small businesses, they are editing away much tedious leg work. And as toys for both young and old, they are eroding the traditional pleasures of teasing the cat and knitting.

These two new information technologies are the ones which for educational broadcasters have been and are centre stage. Two others are creeping up. The first is videodisc. Long regarded as a disastrously expensive side-alley, this is emerging not as a device for replaying films but as a database. Coupled with a microcomputer, a videodisc can provide a large rapidly accessible store of pictures and data. One project, coupled with a series of television programmes, has recently been announced: the BBC's



"Domesday Disc", which will form the electronic version of the 1086 version. For this, data on, for example, recreational and sports facilities, places of worship, shopping facilities and transport services (bus stations, railway stations, etc) will be collected by pupils from 10,000 schools in every area of Britain and fed using individual microcomputers and specially designed software into the final Domesday Disc. It is an exciting project both educationally and technically and it moves another information technology gadget one rung higher.

The second is the satellite network. Apart from using satellites for direct broadcasting, about which there has been much talk and even more paper, point-to-point communications are in rapid development. Project SHARE (Satellite for Health and Rural Education) initiated by the international telecommunications satellite organization, Intelsat, and the International Institute of Communications, is for the next two years allowing for exchange of information in the areas of health and education throughout the world using Intelsat's system of 15 satellites in synchronous orbit. During this experiment, universities, libraries, hospitals, research centres and individuals in often remote areas will explore and develop communication systems using, for example, two-way voice and facsimile, two-way digitally-compressed video, slow-scan video, personal computer to personal computer communication by small Earth terminals, and video- and audio-conferencing. The question we must now ask is whether the economics of such space technologies will allow for home and school penetration on timescales that will rival video and the microcomputer.

Educational broadcasters are always closely associated with the development of new information technology. The media are tied inextricably with the messages. Recent developments have not only allowed us to do better what we have done before but have also changed our products and pointed a way towards a flexible development of our future. Through these technologies the opportunities for learning are bound to increase both in the home and in our schools. It is only a matter of time. My guess is that our overall educational provision and the techniques by which we learn will be considerably changed by the year 2000.

Jim Stevenson is Education Secretary for the British Broadcasting Corporation, formerly Head of Programmes at the BBC's Open University Production Centre.

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high speed; periodicals, books and other larger documents can be filmed on a planetary camera. Once the documents have been recorded and the reels of 16-millimetre film have been processed, they are loaded into one of Kodak's microfilm roll film retrieval units where the film is wound through automatically a frame at a time and, while the frame is displayed on the screen, an operator can index it by keying in certain key words into the Kodak computer system via a standard cathode-ray tube (CRT) and keyboard. With the Kodak system, as with most turn-key CAR systems, there is a modified Database Management System software package supplied as part of the system so all the operator has to do is enter the relevant data in the fields as indicated by a flashing cursor and a series of operator prompts on the screen. Once all the frames on the film have been indexed, the reel of film is stored in a carousel system alongside the work-station which comprises the CRT, microfilm retrieval unit and film storage unit.

The KAR 4000 system is based around a powerful, microcomputer system and can support up to eight work-stations, so that different departments within an organization can use the same computer to store the index to their own individual microfilm files. At the retrieval stage the user accesses the computer index and searches for the particular document he wants. When the document is located, the CRT will display the microfilm location where that image is stored; the user then simply loads the relevant reel of film into the retrieval unit and presses a search button on the computer terminal. In under ten seconds, the relevant document image is displayed on the screen or printed out. The Kodak system has been used to file invoices, delivery notes, criminal re-

cords, and so on. Other systems - based on microfiche and jackets - have been used to file newspaper cuttings and trade literature catalogues in technical libraries and personnel and student records in many public sector organizations.

Both COM and CAR systems help organizations to overcome one of the last remaining obstacles to office/library automation - namely the problem of how to capture, store and retrieve the ever growing mountains of paper that pour into offices and libraries every day. However, there are still limitations with current CAR systems that mean they fall short of many companies' view of the ideal office/library of the future. The ideal would be to totally integrate document and data storage systems so the user only needs one multi-purpose work-station to access all the sources of information he needs to enable him to carry out his particular duties. In the office this means having access via one screen to both his own correspondence which has been generated internally on a word-processing system and also his clients' correspondence which has been received by the organization in hand-written form. In the library environment, it means being able to go online to a bibliographic database such as "Chemical Abstracts", find the reference for the article you want and then, instead of having to fill in a request form and send it off to the British Library who will then send a photocopy of the article by post or van, simply press a button on the terminal and access the full text of that article displayed on the same screen or printed out via a printer attached to the terminal.

Such an ideal may sound like science fiction, but the fact is that the necessary technology to create such systems exists today, and it is not too long before such systems will make sense economically as well as technically. The

key elements of such future electronic document storage systems include sophisticated charge-coupled device array scanners capable of performing analog to digital conversion of source documents at speeds of one A4 page per second; high-speed data networks for the transmission of digital bit streams; very high-resolution display terminals capable of displaying in excess of 2,000 lines on a 15 inch screen and two storage media. The first is microfilm stored in automatic retrieval units that operate under computer control and can retrieve, scan and digitize microfilm images at high speed, the second is a totally new storage media - the digital optical disc - developed as a spin-off from optical videodisc systems and offering low-cost, high-density digital storage.

Such systems are referred to variously as videomicrographic systems, microimage transmission systems and electronic document storage systems (EDSS) - we will adopt the latter term. A number of companies in the United States, including Ragen, Access Corporation, TERA, Integrated Automation, Philips and others have installed such systems. The most recent system to have been announced is the Kodak Image Management System (KIMS) which is based on Kodak's CAR system - KAR 4000 - and offers existing users of microfilm systems a path through to these EDSS. KIMS, and many more systems like it, will contribute enormously to the versatility of future electronic document storage and retrieval systems that will make use of microfilm, magnetic media and digital optical discs to cater for a wide range of requirements.

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BOOKS Religious liberty

Religion and the Law: religious liberty in modern English law
by St John A. Robilliard
Manchester University Press, £22.50
ISBN 0 7190 0956 1

The legal framework of religious liberty in England has received much less attention from writers on civil liberties than more immediate (dare one say fashionable?) issues. The slightest acquaintance with history and international affairs reminds us that it was a problem in England, and still is in many other parts of the globe, some uncomfortably close; but it is easy to assume that a declining incidence of strongly held religious beliefs has lowered the temperature of those religious issues the law needs to resolve.

It would, however, be unwise to assume that the law operates without difficulty. The value of Mr Robilliard's book is to highlight the real, and in some cases growing, areas of conflict between the interests of the religious community and those of a secular state.

A starting point of general religious toleration and minimal state interference serves to raise as many problems as it may resolve. How far should there be parity between religion and irreligion (over such issues as charitable status and protection of religious susceptibilities from offence)? How far should religious standards dictate policy on non-religious matters (abortion, or restrictions on national educational policy imposed by the need to accommodate separate schools run by religious organizations)? Is it legitimate for the state to scrutinize the bona fides of "religious" bodies before according them such legal privileges as attach to a religion? To what extent

can religious belief justify exemptions from civic obligations (to care for children in accordance with "normal" medical standards, to pay taxes for nuclear weapons conscription)?

Issues such as these have in many cases been sharpened by the multiplicity of religions now widely practised in England, the rise of pseudo-religious advances in medical science and a more general sharpening of social divisions. It is abundantly clear from Robilliard's book that the response of judges and legislators to all of these pressures has been purely ad hoc. Whether it is possible to construct principles to resolve issues of religious liberty is debatable - it is at least doubtful whether the attempt to implement any such principles would survive long in the rough and tumble of litigation and political pressures. But the issue is interesting and it is a pity Mr Robilliard makes no real attempt

to examine its implications. Two other comments should be made about this book. The first is that in dealing with the religious dimension of more general legal problems, one is often looking at the general from an essentially peripheral perspective. This can be an oddly distorting process, as in the author's discussion of *Mandla v Lee* (the Sikh schoolboy case) which is criticized at length over what in relation to the case as a whole is no more than a side issue. The second comment is that the author, an essay one to avoid, is shown even more clearly in the chapter on employment relationships, which degenerates into a series of points of substantive employment law unconnected except by the mention of religion in each.

The other point is that readers could be forgiven the impression that religious liberty is a uniquely English issue. Apart from a couple of American cases and brief mention of the

Northern Irish anti-discrimination legislation, there is almost no comparative material, and even Scotland is overlooked. The very different Scottish Sunday trading legislation, and the constitutional differences between the two established churches, at least, would have been worth bringing in. More use could also have been made of the guarantees of religious freedom in the European Convention on Human Rights, with some discussion of whether our domestic law is in conformity with it. As it is, what little commentary there is tends to be disappointingly bland. This is, nevertheless, something of a pioneering work, opening up important areas for study and discussion.

Peter Wallington

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Fighting crime

What is to be Done about Law and Order? crisis in the eighties
by John Lea and Jock Young
Penguin, £2.95
ISBN 0 14 006593 8

The first answer is, of course, to avoid cheap and dangerous slogans. It is relatively easy to discuss crime but very difficult to be dispassionate about law and order. One political party, I have been told, has appropriated the whole notion of law and order without being able to make any impact - other than negative - upon crime. A second answer is to consider whether law is related to order and, if so, in what way. This would allow us to get some idea of the kind of problem with which we are dealing. Despite its title this book is not based upon slogans although it does not look rigorously at the problematic notion of law and order. Instead, it is a very serious and humane

attempt to examine what has become known as normal crime - assault, theft, robbery, burglary and the like.

John Lea and Jock Young identify two currents of opinion about crime: the shared mass media and right-wing view that crime is escalating and that drastic measures are required to arrest the collapse of the social fabric; and the left-wing approach which minimizes the problem of working-class crime and generally seeks to debunk the problem of crime. In neither case do the authors feel it necessary to spell out the actual views of the (almost exclusively unidentified) adherents of these positions, and it is not obvious why, even if such views exist, they should be thought worthy of consideration as units of analysis. In this attempt to develop a realistic strategy about crime and policing from a socialist perspective, however, it is between these two currents of opinion that the authors tell us the "new left realism" must seek to navigate.

The crime rate, they properly point out, is not an obvious fact but a social and political construction. Criminal statistics do not mean one thing but many things. On the other hand, they counsel, the figures are not meaning-

less and must neither be underestimated nor sensationalized. It is not reassuring, they point out, to be told that the average person can expect a robbery once every five centuries; an assault resulting in some injury once every century; the family car to be stolen or joyridden once every sixty years; and a burglary in the home once every forty years. It is not reassuring because, although the overall chances of victimization are or seem low, the objective likelihood of serious crime occurring to an individual is much affected by locality and by the social characteristics of an individual. In other words, although there is a remarkable symmetry between the characteristics of offenders and victims in street crimes (young, lower working-class males on both sides of the criminal act), others, while subject to exaggerated fear of crime, are also in fact at some risk. There is a rational kernel to the fear of crime.

Crime must be taken seriously. It is, Lea and Young argue, a product of relative cultural deprivation and community breakdown in which discontent is not allowed to be channelled into political form. Crime is, therefore, a result of economic discontent without political alternatives. Crime control is

thus essential and this involves "de-marginalization" (measures designed to integrate rather than separate the offender), pre-emptive deterrence (environmental precautions against crime and neighbourhood watch schemes), and the minimal use of prison. The police must be made effective by turning the force into a public service and by subjecting the police to positive public accountability. Accountability here means that the community consults the police as part of the process of defining its strategy. There is no doubt that this book contains many important points but there is a great danger that these will be lost in the arguments it is bound to generate. Although Lea and Young purport to steer a passage between two extreme views, much of the book is in fact an internee war of the left. The largely disembodied and apparently hegemonic "left" that is attacked soon become "left-wing apologists for crime" or "left-wing romantics". The weak arguments and slips of the critics are handled easily enough but the harder arguments tend to be less effectively dispatched.

In these debates, moreover, it is not the important points that matter; it is the overall message that counts. If, for example, we accept the contention that crime is a product of capitalism and that, though its dimensions may be exaggerated, it is a real problem for working-class people, it is not obvious that the solution should be to re-integrate the offender, even if we accept that this implies that the control institutions must be transformed to epitomize justice. It is all very well to talk of creating or re-creating a community, but what sort of community is it that puts a great deal of emphasis on watching each other as snoopers? And it is hardly an answer to the question of what is to be done about police power to respond that the police should be made more effective.

Michael McConville

Dr McConville is senior lecturer in law at the University of Birmingham.

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BOOKS

From boom to gloom

The British Economic Crisis: its past and future
by Keith Smith
Pelican, £3.50
ISBN 0 14 022502 1
Capitalism since World War II: the making and breakup of the great boom
by Philip Armstrong, Andrew Glyn and John Harrison
Fontana, £4.95
ISBN 0 00 635794 6

Severe economic depressions tend to generate a boom in at least one industry: the publication of books on how they came about, and how to climb out of them. The two new titles in this genre now before us have much in common. They present critical and pessimistic views from the left or far left, they trace their historical narrative

with excursions into theory, they are intended for popular consumption and - a sign of the times - both of them devote a good deal of attention to the making and in particular to the key role of the Ministry of International Trade and Industry in the Japanese industrial miracle. But there the similarity largely ends.

Keith Smith's sombre account of the British economy is much the more consistent and intellectually satisfying of the two. One of its main themes is that the severity of the present crisis derives from the coming together of two separate adverse developments, a long-term decline of British industrial efficiency relative to others, dating from the late nineteenth century, and the catastrophic monetarist policies pursued by the present Government. The account of the long-term loss of competitiveness mercifully leaves out the conventional macroeconomic symptoms, and concentrates on the real factories and workshops on the ground, especially the consistent failure to install and indeed to master the latest technology. Even when the Government intervened in the postwar years to raise the technological level, it was found that the substantial British expenditure on research and development was mainly wasted on the aircraft and the armaments industries generally, instead of concentrating on the winners of the future, like electronics and chemicals. Now at the end of the

wasted years, British industry is simply no longer viable.

The discussion on current policies is introduced by a lengthy account of the relevant rival theories, Keynesian and monetarist, with their numerous variants. Some of this will be hard going for the layman, but it is written with verve and clarity, and isolates with great skill those aspects of the complex general theoretical structures which are relevant to the discussion in hand. Even the non-economist will have no difficulty in enjoying the thrusts at the absurdities and inconsistencies of monetarist dogma and its derived Thatcherite practice.

The author is obsessed by the fear over what will happen when the oil begins to run out, which he expects to occur before the end of this century. Neither the free market, nor nationalization as practised hitherto will offer much hope, instead, he proposes a combination of the best of both systems, overall state guidance and support combined with decentralized management. Additionally, in place of the panaceas of macroeconomic management beloved of economic advisers, such as investment-led or consumption-led expansion, he urges a painstaking detailed improvement of technology and an industry-by-industry plan of modernization. It is a sober and persuasive programme.

The study by Armstrong, Glyn and Harrison of the economy of the adv-

anced western world impresses by the wide sweep of its data base, which covers all the main countries in some detail, though it is somewhat breathless and the impression of a scissor-cut and paste job has not been entirely avoided. As for the snippets of theory which are intended to elucidate them, however, it would be a kindness to describe them as examples of vulgar Marxism. The study is not apparently about the economics of certain countries, but, as the title implies, about a conscious entity called "capitalism". In capitalism there are, it seems, only two types of people, capitalists and workers, thus effectively shutting out more than half the actual income earners who are always in the right, but they have been betrayed time and again by their representatives in the Labour and socialist as well as in the communist parties, especially in the latter.

On this somewhat unpromising base the story of the postwar reconstruction, the long boom of the 1950s and 1960s and the decline and crisis from 1974 onwards is built up. It is largely an economic history, but some political and diplomatic acts find a place, particularly those committed by the United States. Clearly, the long boom in which output and standards of living almost tripled in conditions of high employment causes some difficulty, but in a few remarkable pages the authors manage, while keeping entire-

ly within Marx's terminology and assumptions, to show that, given certain conditions, the analysis of *Das Kapital* might be used to prove that economic growth, capital accumulation, technical progress and rapidly rising real wages over many years were entirely compatible with modern capitalism.

Much the most interesting chapters, perhaps the only ones worth reading, concern the break in the boom, which it is argued here was due to inherent contradictions as well as to OPEC. Here we enter a different world from the rest of the book: the argument tightens, the clichés disappear, the language becomes professional. Not entirely surprisingly, the fall in the rate of profit plays a large part in the analysis, as does the unduly high rate of over-accumulation (of capital). Unfortunately, since this Marxist term is used throughout, it is not clear whether savings or investment are meant. If it is savings, (ie if we have here the traditional theory that the maldistribution of incomes, too much going to the rich, leads to over-saving) then it is not clear why everyone had to increase his borrowing at the time, as is alleged in the explanation of the concurrent inflation; if, on the other hand, it is investment, which became too high, then it is even less evident why the authors, who constantly emphasize that all investment is made in expectation of profit, should believe that a decade of falling profit rates would be accompanied by sharply rising capital investment.

The excess of accumulation, it should be noted, is to be understood not in relation to the market, but in relation to the available labour power. For the authors hold to Marx's notion of a fixed quantity of labour with which any unit of capital can be combined or "set in motion". They therefore come several times quite close to the obvious, but to them inconvenient conclusion that the fall in the rate of profit from the late 1960s onward is related to the enormous success of labour, both in the labour market and via the social services, to absorb ever larger shares of the national cake, and that its ability to continue to do so will delay the recovery.

If there is merit in this book, it lies in the tacit recognition that economic movements of the kind described here depend on quantities, on immediately preceding conditions and conjunctures, on the relative weight of influences at any one time, and not on eternal "laws of motion" of capitalism, as postulated by Marx. This makes prediction more difficult, and indeed the authors do not know how it will continue: "capitalism" might tumble along for a long time yet, or it may just collapse. Despite its Marxist terminology, good Marxists are not going to like this book, either.

Sidney Pollard

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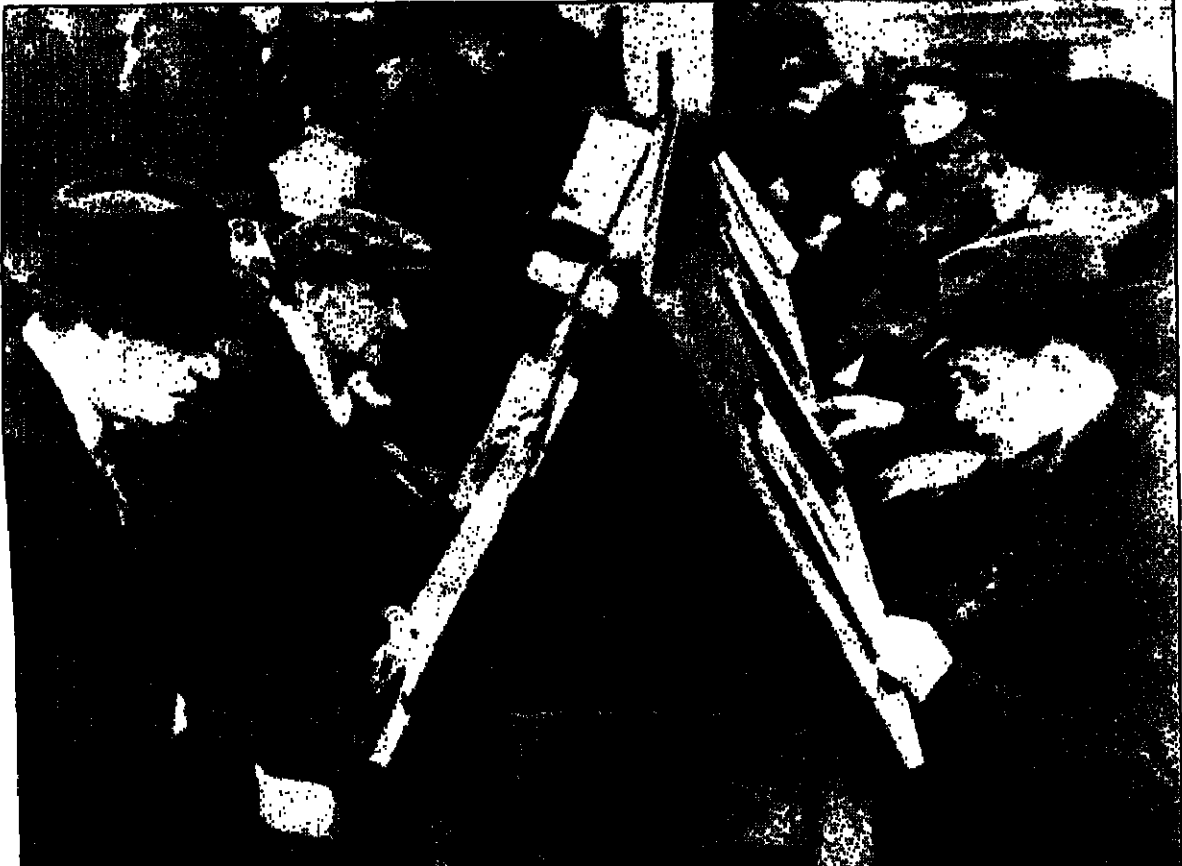
Welfare mess

Action on Welfare: reform of personal income (taxation and social security) by Hermione Parker
Social Affairs Unit, £2.00
ISBN 0 907631 09 6
The Reform of Social Security by A. W. Dilnot, J. A. Kay and C. N. Morris
Oxford University Press for the Institute for Fiscal Studies, £10.00 and £3.95
ISBN 0 19 877226 2 and 877225 4

Almost everyone is undertaking a fundamental review of the tax and social security systems these days. The need for reconsideration of income redistribution instruments, with the aim of introducing a much simpler structure, has been clear since the early 1970s. But there has been little detailed work until the recent spate of suggestions. The conservative approach, mainly adopted by the poverty lobby anxious to protect its gains, is to see little wrong with the present basic structure that could not be cured by putting more money in; the objective is to reduce the role of means tests by ensuring adequate support through contingent benefits. The radical approach is to seek a simple algorithm for the transfer of money between families within a single administrative framework. The difficulty, of course, is that there is no simple solution that meets everybody's objectives, since the objectives themselves are at variance.

Hermione Parker has been the champion of a "social dividend" scheme which she calls the Basic Income Guarantee. She has introduced significant modifications to iron out some of the flaws in the plan she put to the House of Commons select committee investigating "the structure of personal income taxation and income support" (the Meade Committee). In her new paper, however, the most important contribution is a detailed comparison between the present system and the alternatives proposed in a wide range of the political spectrum. She has calculated the outcome of each proposal for a range of "typical" families, at various levels of earnings. In order to illustrate the likely distributive and incentive effects of each plan.

The mass of calculations necessary for this must have been a formidable task, and it needs to be said that deriving conclusions from the bulky comparative tables in *Action on Welfare* is not easy going either. Nor are "model families" the best method of analysing tax-benefit proposals; simulations based on a random sample of real families are better. Nevertheless, the comparisons are a considerable step forward, principally because Parker introduces reasonably impartial evaluation of the pros and cons of various options into a debate which is overcrowded by proponents of par-



"Where the Unemployed Look for Work", one of a series of photographs illustrating a Picture Post article about an out-of-work enamel-maker in 1939. Taken from a new edition of *Picture Post 1938-50* edited by Tom Hopkinson published next Monday by Chatto & Windus at £8.95.

icular schemes crying their wares.

Andrew Dilnot, John Kay and Nick Morris's proposals for *The Reform of Social Security* need to be considered in two parts: their ideas about the mechanisms by which taxes and benefits might be administered, and their suggestion of how those mechanisms ought to be used to redistribute income. Much of their book consists of the most fully argued case to date for converting the present complex of separately administered taxes and benefits into a single system. The idea has been in currency for at least 10 years, but the Institute for Fiscal Studies team has made considerable progress in identifying the potential advantages of such a reform, and in showing how it might operate in practice. And partly by the strength of their exposition, it also partly by the good fortune of their timing, they have succeeded in getting long-term reform onto the policy agenda. That may be considered a valuable achievement even though one might dispute the proposed solution in detail, and even though the argument has been grossly oversimplified.

Most "comprehensive schemes" are strong on the points specifically addressed by their inventors, and weak elsewhere. The Dilnot, Kay and Morris scheme is no exception. Its strengths lie in its union of the tasks now performed separately by income tax, national insurance, child benefit and various means tests. Although they define tax credits in an unfortunate way (which is crucial to the develop-

ment of their later arguments about redistribution), their proposals for a system of "benefit credits" subject to a single rate of withdrawal certainly merit detailed consideration. But, of course, the claim that the system can be made to achieve any desired object cannot be treated seriously in the absence of explicit solutions to other equally important issues: assessment of the disabled, the assumed dependent status of wives, treatment of part-time work, treatment of non-householders, equity between owner occupiers and tenants, consideration of special needs and so on. As an example of the way these issues are skated over, the words "family" and "household" are used interchangeably throughout; this effectively eliminates the need to consider the one in four of all tax/benefit assessment units who are non-householders.

These problems detract from the presentation of the book's administrative thesis, without undermining it altogether. But they are both more prevalent and more serious in the final part. These mechanisms could, the authors argue, be used for all sorts of possible redistributions, but they suggest only one, and while pointing out that this is only an example of possible options, its presentation as an extension of the previous logic makes it extremely difficult to separate the arguments. Those who have followed the case for a reform of mechanisms are strongly persuaded into accepting the specific proposals while those

rejecting the specific proposals will tend to reject the whole package of administrative reform. The proposals include more than doubling the nominal rate of benefits paid for children, but subjecting the whole amount to a steep means test. This is alleged to be essential to prevent "us" from supporting the children of rich parents. Meanwhile nearly a fifth of non-pensioner families would be paying tax at a marginal rate of 84 per cent.

This is an option which needs to be compared with alternatives, and the pros and cons analysed. But Dilnot, Kay and Morris take enthusiasm for their pet scheme to the extreme of hitting all opposition over the head with a blunt instrument. If you raise a doubt, you are just demonstrating "the defensive reactions of a handful of DHSS officials"; you are a "ludicrously revealing 'shillbolee'", you may even be a "ritual incantation". We gather that because an argument has been rehearsed "repeatedly" the authors are entitled to impatience if we still don't accept it. In short, there is No Alternative.

Of course there are alternatives, which Dilnot, Kay and Morris have failed to examine because of their "single minded pursuit" (as they put it) of a shillbolee of their own. Indeed, they have lost their analytical tool, so that the appropriateness of parts of the earlier analysis overwhelms the argument. The text is directly contradicted by the appendix in which the proposals

are stated in detail. The critical evidence on families' profit and loss from the new scheme, based on extremely sophisticated computer analysis, is presented in a series of illegible small graphs supported by a short paragraph (which states a simple conclusion) not consistent with the graphs. All the analysis of the distribution of income post-reform omits non-working families below pensionable age. Since this is one of the most important groups at risk of poverty, this omission is astonishing; Dilnot, Kay and Morris do not even bother to mention it.

Hermione Parker masked some good analysis in a previous paper by giving it the fatuous title *The Moral Hazard of Social Benefits*. In her current work, however, she gives a genuinely analytical and almost impartial comparison of the various schemes. She confines her value judgments to the first chapter ("... bottomless pit for the taxpayer... self reliance replaced by the begging bowl... financial penalties for bastardy diminished..."), and we can forget them when reading the substantive analysis. Dilnot, Kay and Morris have spoiled what would have been an excellent work by letting overenthusiasm preempt proper analysis.

Richard Berthoud

Richard Berthoud is a senior research fellow at the Policy Studies Institute.

BOOKS

PSYCHOLOGY

Seeing the funny side

Psychological Games
by Nicola Alberto de Carlo
Macdonald, £12.95
ISBN 0 336 10516 4

Perhaps the simplest and most conclusive mental test ever devised is one to discover whether someone is an extrovert or an introvert. You simply ask "Are you an extrovert or an introvert?" If the person answers, he is an extrovert; if he does not, he is an introvert. Most tests are rather more elaborate, and particularly in the United States there is a large industry devoted to producing them. Its products become obsolete quite quickly, since as soon as one version of a test is widely known, it is necessary to produce a different one. Moreover, most citizens have at some time been asked to take a mental test.

One of the curiosities of mental testing is that while people hate taking them if anything hinges on the result, they find them fascinating to do for fun. The main appeal of *Psychological Games* is that it contains a large number of tests and answers with which readers may amuse themselves. The tests divide into two categories: those intended to measure intellectual abilities and those that purport to measure aspects of the personality.

Intelligence tests measure, among other things, verbal, numerical and visual-spatial abilities. A simple question of the last kind presents a shape and asks the testee to select which of six other shapes could be produced by inverting the original one and then rotating it in the fronto-parallel plane. The book contains tests that vary greatly in difficulty. It requires little cognition to provide the next number in the sequence "25, 20, 15, 10".

But some readers may well be baffled when asked what "Constable" equals

given that "Rembrandt = 83", and "Cezanne = 48".

The intelligence tests, therefore, contain something for everyone. If you get bored with them, you can always try completing the 210 items in one of the personality tests: the results will enable you to estimate numerically how happy or how confident you are, provided your arithmetical ability is high enough for you to do the required calculations. In short, if you like doing tests, you will enjoy the ones in this book, particularly as some are comparatively unusual. There are, for example, intriguing looking pictures of interlocking cog-wheels or sets of levers: the reader has to decide what happens to one wheel or lever if a distant one is turned or pulled in a particular direction.

Mental tests often contain serious defects and the ones in this book are no exception. First, some of them can be solved by using knowledge rather than intelligence. For example, if you do not know how to go about the problem, it will take a considerable effort to discover that the next number in the sequence "5, 41, 149, 329" is 581, whereas if you know that problems of this type can be solved by taking the differences between successive numbers and the differences between successive differences (always 72 in the example), the answer is easy to calculate.

Second, the reader will do well to bear in mind the arbitrary ideas that run through the heads of the designers of the questions. If he is aware that in setting a question of the "Rembrandt = 83" kind, they are likely to be allocating numbers to letters according to their position in the alphabet, he stands a good chance of solving it. If not, he will find himself in difficulties.

Third, some of the questions are poorly worded. For example, the reader may be instructed to "rotate" a figure without being told whether the rotation is to take place in the third dimension (for example, around a vertical axis) or in two dimensions (that is, in the plane of the paper).

There are many interesting and important questions that can be asked, and indeed answered, about mental tests. Unfortunately, the text that accompanies the batteries of questions, de Carlo gives only a superficial account of the problems raised by their design and use. Although he points out

that tests should be reliable (that is, they should produce consistent scores when administered to the same individual on different occasions) and valid (they should measure what they purport to measure), there is no discussion of whether they meet these criteria or indeed of whether they are of any practical use. The brief discussion of how far intelligence as measured by tests is innate and how far it is affected by experience is wholly inadequate, and there is no mention of the important question of whether intelligence tests are fair when administered to members of different cultural groups.

In considering whether mental ability is based on a single capacity, general intelligence or "g" as Charles Spearman called it, de Carlo points out that when a large number of different tests are given, the results may be subjected to a factor analysis which groups together sets of tests on which individual subjects tend to have the same performance and which therefore breaks down general intelligence into different factors. But he fails to warn the reader that factor analysis is a mathematical technique that does not yield an unequivocal result. The outcome depends among other things, on how many different factors the test designer decides to allow, and this decision is an arbitrary one. It also depends on the nature of the actual questions set in the test.

The book has other faults. It contains numerous boxes which provide indigestible chunks of information on a variety of topics that have little or nothing to do with the main text: they include the perception of transparency, motion perception, and ethology. I wondered what is the point of the book: the author's answer appears on page 54 where he states that the purpose of the tests presented is "to provide you with a better understanding of certain aspects of yourself so you can smile at your own and other people's strengths and failings". It would require someone with a very well developed sense of humour to find the failings of this book risible.

Stuart Sutherland

Professor Sutherland is Director of the Centre for Research on Perception and Cognition at the University of Sussex.

Behaviour at work

Applying Psychology in Organizations
by Frank Blackler and Sylvia Shmim
Methuen, £2.95
ISBN 0 416 33680 9
Social Psychology and Organizational Behaviour
edited by Michael Gruneberg and Toby Wall
Wiley, £15.95
ISBN 0 471 10326 8

As both these books remind us, industrial psychology first came into being during and after World War I, being given a particularly strong boost by the well-known experiments at the Hawthorne factory in Chicago into the determinants of workers' performance - including, to the researchers' surprise, the observation itself. Those experiments were widely seen as establishing the importance of social and psychological factors in the behaviour of those at work. The interests of the contributors to these two volumes are mostly in the same area, but they speak a more diverse range of tongues. One point on which most of the authors are agreed is that the research field is more appropriately considered as organizational rather than industrial psychology. None the less, most of the practical examples cited continue to be drawn from industry.

The more coherent account is Blackler and Shmim's in industrial text, in Methuen's "New Essential Psychology" series, which seeks to outline the nature of organizational behaviour of interest to a psychologist. Two distinctive emphases are apparent: a preference for drawing on British rather than American studies, and a preference for boundaries between "pure" and "applied" research. So far as is possible within 135 pages, attention is given to such issues as career choice and work as a source of identity; selection and training; organizational structure; motivation and group behaviour; job

design and socio-technical systems theory; and the creation of organizational change. The discussion of all of these issues is intelligent, though perhaps a little abstract for an introductory book.

There has long been a regrettable gap between books addressed to organizational practitioners, which are usually suffused with optimism and often advance some new training procedure or approach to organizational consultancy, and books addressed to the academic community which are liberally spiced with caution and scepticism. Blackler and Shmim seek to bridge this gap, but they go about it in a manner which left me feeling distinctly uneasy. In the early part of the book they indicate what they see as the shortcomings of research in the various fields they discuss. Later they propose that the most useful role of organizational psychologists may be to "give psychology away", that is, to concentrate on helping practitioners to find out what is wrong with a particular organization and to help them to devise improved ways of doing things.

This they see as superior to promulgating generalized theories about human nature or organizational behaviour because such generalizations, from Hawthorne onwards, have not stood the test of time. My own unease stemmed from the fact that the case studies which they then go on to present, such as the restructuring of the Volvo assembly line and the creation of change within Shell, are not treated as failures. Although the authors analyse cogently why the programmes did not achieve long-lasting effects and how they could have been done better, they do not have much to say on how these projects did create substantial change and sustained it for a number of years, before the setbacks which they outline. To give so much of organizational psychology away is to run the risk that critics, not to mention the novices to whom this book is primarily addressed, will argue that it no longer exists at all.

The book edited by Gruneberg and Wall explores many of the same issues, but does so by way of eight specially-commissioned chapters, half of them by British authors and half by Americans and Australians. There is also

coverage of industrial relations, which goes some way towards redressing pro-management bias, and a particularly clear discussion of organizational change.

Although the book is more traditionally academic, it is also substantially more optimistic. Consider, for instance, contingency theories of leadership and organizational structure, which seek to specify what type of leadership or structure is best for particular circumstances. Blackler and Shmim quickly dispose of such theories as having "an apparent sophistication", whereas many of Gruneberg and Wall's contributors find value in them. Other aspects of the book may illustrate why Blackler and Shmim adopt their particular stance.

All the contributors would probably agree that an adequate account of organizational behaviour must include attention to individuals, groups and organizational structure. However, their contributions tend to be pitched at one or other of these levels, thereby reducing continually with other chapters. The problem, of course, is not one just for the contributors to this book but for anyone who still has hopes that a coherent account of organizational behaviour can be accomplished. Compared to the Hawthorne investigators, we now know enough to be critical of the simple generalizations which they came up with, but we have very partial truths. We still have some way to go in defining the most useful ways to study and to create changes within systems as complex as organizations.

Peter B. Smith

Peter B. Smith is reader in social psychology at the University of Sussex.

A second edition of Jerome Kagan and Howard A. Moss's *Birth to Maturity: a study in psychological development* has been published, with a new preface by Professor Kagan, by Yale University Press at £22.50 and £7.95.

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The authors of this book propose a social conception of intelligence and of its development: they consider intelligence as resulting from the interaction of individual coordinations of actions and judgments. They experimentally study how groups of children elaborate new cognitive tools which their members, taken individually, did not possess at the start, and how these cognitive tools are subsequently used by the child alone.

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BOOKS

PSYCHOLOGY

Mental mimicry

Computation and Cognition: toward a foundation for cognitive science
by Zenon W. Pylyshyn
MIT Press, £26.15
ISBN 0 262 16098 6

Matter and Consciousness:
a contemporary introduction
to the philosophy of mind
by Paul Churchland
MIT Press,
£20.90 and £8.75
ISBN 0 262 03103 5 and 5305 03

Bertrand Russell said of mathematics that it was the subject in which nobody knows what they are talking about. He meant, not that mathematicians are incompetent, but that the subject-matter of mathematics is philosophically problematic. Had he been writing today, he might have said: 'one of the two subjects in which nobody knows what they are talking about'. For cognitive science, also, is philosophically ill-defined.

Descriptive definitions are easy enough: 'cognitive science' is an amalgam of disciplines dealing with mental or representational processes — such as psychology, philosophy, linguistics, neurophysiology, and artificial intelligence or computer science. But what sort of 'amalgam' is this: a mere mixture or a genuine compound? If the former, what methodological practices associate these diverse disciplines? If the latter, what theoretical principles bind them firmly together? Further, what is the force of the 'or' in the phrase 'mental or representational processes'? Does it mean 'or, in other words...', or does it mean 'or, on the other hand...'?

Even if we concentrate on only one field, such as (computational) psychology, we are hardly better off. For what is this? It cannot be just any branch of psychology which uses computers for some purpose or other. Computers — or programs — must play some central theoretical role in the computational psychologist's claims about the mind. Given that computational psychology compares mental processes with the sort of processes carried out by computer programs, what does 'compare' mean here? Is it merely a loose metaphor, evading almost every empirical test on the grounds that 'that feature isn't a relevant part of the metaphor'? Or is it a theoretical identification, a claim that psychological processes really are computations, in precisely the same sense in which programmed processes are? And what are computations, anyway? (It would not have helped to reply to Russell, 'Mathematics is about numbers, for what are numbers?')

Problems arise, too, about how to evaluate programs as theories of mental processes. How can we test whether a certain program functions in the same way as some (unconscious) mental process? How can this notion be interpreted in the first place? Can we ignore the differences between neurophysiology and computer hardware, and/or the differences between very elementary information processes (if so, which)? For that matter, how can we be sure that two programs do something 'in the same way' — or even 'do the same thing'?

These questions are rarely asked in a systematic way. Too often, they are largely ignored by cognitive scientists, attention being focused on superficial performance similarities between programs and human subjects: Zenon Pylyshyn is one of the few people who have been asking these questions for over a decade. His fine book is the result. It is not a report of experimental work, but a sustained argument about the philosophical foundation of cognitive science and the methodology of computational psychology.

He draws on many issues in the theory of computer science, such as the semantics of programming languages. In particular, his account of what computations are is based in computer science. Pylyshyn has little patience with those who see programs as mere metaphors for the mind. He sees the central claim of computational

psychology as arguing that mental processes really are computations. It is therefore possible that computer programs could do the very same things as the mind does, in the very same way. But even if this is possible, the problem remains of deciding when it is true. Which programs are acceptable as well-supported theories of psychology? And which are not? The two tasks, produce superficially similar output without doing so in a psychologically relevant way.

To answer this, says Pylyshyn, requires a principled distinction between the fixed constraints of a given information-processing machine (its 'functional architecture') and the computational processes (or algorithms) running on it. Given that any computational process can be effected by some computer, the mere mimicry of a psychological phenomenon tells us nothing about just how the mind does it. We must identify the basic information-processing constraints on the mind's symbolic functions if we are to say anything of any interest about this.

For example, if we established that no more than seven items can be held in short-term memory, then no algorithm requiring at least twenty items could be psychologically significant — even if it produced output very similar to human performance.

The basic methodological problem is to develop empirical criteria for identifying those psychological phenomena attributable to the functional architecture, as distinct from those due to computational processes carried out by that architecture. One such criterion is 'cognitive penetrability'. Whatever psychological phenomena can be affected by the meaning, or semantic content, of the person's goals and beliefs are not architectural phenomena. Rather, they are computational processes defined at the 'intentional' level. The architectural constraints are fixed, relative to the semantic content of the mind. (Certainly, they may sometimes change; but this is due to factors such as chemical or maturational change.) Evidence that a psychological process can be influenced by the meanings in the mind, therefore, is evidence against that process being part of the functional architecture.

Pylyshyn uses this criterion to attack currently fashionable views about imagery. Many experiments seem to suggest that imagery is a non-computational analogue process. For example, if someone is asked to imagine their study, and then to imagine walking from either the desk or the fireplace to the door, the time taken for them to 'reach' the door varies according to the distance 'traversed'. The implication, it seems, is that something is actually being traversed — that 'some-

thing' presumably being the mental image.

However, Pylyshyn reports experiments showing that such features can be rationally influenced by changing the experimental instructions. Asking the person to imagine shifting their gaze (rather than their feet) to the door, for example, destroys the time difference between the two tasks. Significantly, people know that shifting their gaze can be done equally quickly whatever the distance of the things being gazed at. Similarly, people know that walking longer distances takes more time. Pylyshyn argues that this is why they imagine themselves to take more time to traverse the longer pathway. Because the phenomenon is cognitively penetrable, it is not part of the functional architecture, nor attributable to a special, non-computational, medium of representation.

Pylyshyn's book is not for the beginner, although it will be required reading for every serious student of the field. Churchland's little book, by contrast, is an admirably readable introduction to current philosophy of mind.

Churchland argues persuasively, — and imaginatively, — that the basic philosophical issues will be resolved only after empirical progress in cognitive science. He sketches the ways in which artificial intelligence, neuroscience, and ethology are relevant. He makes many intriguing suggestions about how our thinking about (and perception of) the mind might radically change in the future. And he ends with some intriguing speculations about alien intelligences of various kinds. Many topics discussed are age-old problems: dualism, materialism, self-knowledge, other minds. But there are no philosophical cobwebs here. To read this book with attention is not just to find out about philosophy, but to do it. Churchland has written the best introduction available, for students and for general readers.

Margaret Boden

Margaret Boden is professor of philosophy and psychology at the University of Sussex.

Second editions of three statistical texts have been published: Steve Willett's *Experimental Design and Statistics* (New Essential Psychology series) at £2.95; Colin Robson's *Experiment, Design and Statistics in Psychology* is available from Penguin at £2.95; and Gene V. Glass and Kenneth D. Hopkins's *Statistical Methods in Education and Psychology* is available from Prentice-Hall at £32.90.

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BOOKS

PSYCHOLOGY

Dyslexic types

Developmental Dyslexia: its nature, assessment and remediation
by Michael Thomson
Edward Arnold, £12.50
ISBN 0 7131 6413 1

Contemporary treatments of developmental dyslexia generally start off by acknowledging that distinguishably different sub-types of developmental dyslexia exist. They then generally proceed by ignoring this acknowledged fact, treating dyslexia as a homogeneous disorder. Although Thomson's first chapter includes such an acknowledgment — 'there do seem to be a number of fairly valid sub-types' — unusually, in subsequent chapters, some effort is made to work out the implications of this view. There are places, however, where these implications are ignored.

For example, although the chapter on etiology considers the question of etiology from two different perspectives (the neurological and the cognitive), there is no consideration of the fact that if there are several sub-types there must be several etiologies. This assumption of a single etiology is evident in such statements as: 'there is very strong evidence for some kind of phonological/phonemic/verbal coding difficulty in dyslexic children'; and 'dyslexic difficulties might be due to either a left-hemisphere deficit, or possibly some kind of disconnection syndrome between normal processing for auditory material with abnormal processing for visual material'.

Elsewhere, some attempt is made to face up to the problems posed by the notion of varieties of developmental dyslexia: as Thomson points out, 'the notion is an important one in relation to assessment and remediation'. In his chapters on assessment and remediation he does pay some attention — not enough, but some — to the implications of the sub-type notion. In the chapter

on assessment there is a clear, though very brief, discussion of the particular types of errors in reading and spelling that are characteristic of particular subtypes of developmental dyslexia. In the chapter on remediation there is some discussion of the idea that we should attempt 'to match teaching programmes to particular sub-types of dyslexia', although not much is said about the form such programmes might take; and none of the teaching programmes which Thomson does describe in detail are specifically related to any one dyslexia sub-type.

The major reason why insufficient attention is paid to the existence of varieties of developmental dyslexia is that these varieties are so poorly characterized. The two sub-types most frequently acknowledged are the 'visual' and the 'auditory'. Visual dyslexics are said to have particular difficulties with such 'visual' tasks as discrimination of size and form, and to have poor visual memory. Auditory dyslexics are said to have difficulty with various 'auditory' tasks such as discrimination of speech sounds, sound blending, and naming.

Although there is convincing evidence for the existence of at least these two sub-types, the terms 'visual' and 'auditory' are very misleading as descriptions of the sub-types. When we look at the specific properties of the reading of dyslexic children, what we find is that there are some (the 'visual dyslexics') whose difficulties stem from imperfect ability to recognize words as familiar orthographic patterns, and who must therefore rely to an abnormal degree on sounding out words (using spelling-sound rules) if the words are to be identified. We find other dyslexic children (the 'auditory dyslexics') whose major difficulty is in applying this sounding-out process, and who fail to identify words unless their orthographic patterns are familiar enough to enable immediate visual recognition to occur.

The so-called 'visual dyslexic' will make errors in reading words which do not conform to standard spelling-sound rules ('irregular' or 'exception' words such as 'prize' or 'gauge') and will be liable to confusion between words with different spellings but identical pronunciations (so may understand the printed word 'frays' as meaning a part of a sentence). This pattern of errors is an immediate consequence of using spelling-sound rules to identify words. The so-called

'auditory dyslexic' will make errors in reading whenever the application of spelling-sound rules is required — when, for example, the child has to try to read aloud an unfamiliar word or a pronounceable non-word.

It is an empirical question whether the 'visual dyslexic' has some kind of general visual disability (which happens to affect the recognition of printed words as well as the recognition of non-linguistic visual stimuli) or instead has a specific difficulty with visual word recognition. Equally, it is an empirical question whether the 'auditory dyslexic' has some kind of general auditory disability (which happens to affect the use of spelling-sound rules as well as auditory tasks unrelated to reading) or instead has a specific difficulty with translating letters to sounds by rule. It is, in fact, very unlikely that a description of these dyslexias as impairments of general visual or general auditory abilities is appropriate. This is because there is no evidence for the existence of such general abilities. Thus, the nature of these general abilities is nowhere precisely described. That is why the descriptions of 'visual dyslexia' and 'auditory dyslexia' are so vague and so inconsistent.

There is only one way to achieve precision in the characterization of sub-types of developmental dyslexia. That is to analyse the dyslexic child's reading in relation to a model of the processes involved in normal reading by children, identifying which of those processes are functioning normally in the dyslexic child and which are not. Different sub-types of developmental dyslexia will correspond to different patterns of normality and abnormality within this set of processes. It is a virtue of Thomson's book that at least some attempt is made to do this.

The book has other virtues: its clarity, its excellent account of the methodological requirements (so often flouted) of research on remediation, its survey of work on acquired dyslexia in adults. It is a pity, however, that the book has been rather poorly produced, with numerous typographical and other errors. One particularly liked was 'Many other studies have shown sequencing... as being difficult for the dyslexic.'

Max Coltheart

Max Coltheart is professor of psychology at Birkbeck College, London.

Space invaders

Mind and Media: the effects of television, computers and video games
by Patricia Marks Greenfield
Fontana, £2.50
ISBN 0 00 636593 0

Child psychology is not at all a static subject. It changes a great deal more than other branches of psychology. People probably perceive the frontiers of the discipline as being defined by the visual illustrations in much the same way as others many generations ago, and it is most unlikely that the way they remember or have feelings about what happens to them is any different now than it was before.

But childhood is another matter. Many of the experiences which are easily available to most children in prosperous countries nowadays would have been quite out of the question for any child anywhere at the beginning of this century. Radio, television, and now microcomputers with the opportunities that they give for videogames, word-processing and programming, are in that sense new, and it is quite right that we should wonder what their effects on children are and what effects they are likely to have in the future.

The trouble is that some of these things are so new that we still have very little to say about their impact. There is a great deal of research on the effects of watching television, but so far there is little to say about the consequences of the microcomputer revolution. This does not seem to bother Patricia Greenfield, whose scientific but uncritical book attempts to answer questions about which we know virtually nothing as confidently as others which have been studied competently for a long time.

Although the sub-title will attract many readers, if they really want to know about the 'effects' of all these



things they are bound to be disappointed. Even when Professor Greenfield discusses topics such as the possible effects of television on violent behaviour in adolescents, about which we now know a great deal, she tends to avoid much of the evidence. Her penchant for the book is for small studies which are often quite interesting, but which tell us very little about the long-term effects of the various electronic inventions which interest her.

In one such study, some children either heard an incomplete story or watched it on television, and were then asked to finish it off for the experimenter. This the children did with more imagination after hearing the radio version than after seeing it televised. Here, claims the author, 'is scientific evidence for the belief that radio... stimulates imagination'. It is no such thing, of course. It does not show that children become more imaginative as a result of listening to radio; it only demonstrates that they respond to a radio story differently.

Greenfield is worried that television might lead to a vague and unexplicit prose style — a style which she calls 'vague reference'. It is a plausible idea, but her evidence seems to be her

observation that radio commentaries on baseball games are a great deal more explicit about who is doing what than the commentaries on television. That is no surprise. The radio commentaries need to be more explicit; the audience cannot see what is going on. We cannot conclude from this that watching television will have the effect of making people's descriptions of events less precise. Yet this is what the author seems to be suggesting when she writes that 'Radio... fosters an articulate verbal style of communication. Television... fosters an audiovisual style'.

The evidence which the author presents on the effects of television may be tenuous, but it is practically nonexistent when she turns to videogames and computers. The plain fact is that these things are so new that we have no idea what effects they do have. The questions are interesting enough. Does a child, we should like to know, who spends hours and hours playing Starwars or Pac-Man learn anything useful from doing so? Does learning how to program a computer also teach children to be more logical? So far we have heard many extravagant claims, but no good evidence. We learn a little in this section of the book about Greenfield's enthusiasm, and her son's, for videogames, for word-processing, and to some extent for programming, but not very much else. It would have been more sensible to stick to the question of television; and wait a few years for the evidence that is bound to come on the effects on children of the microcomputer revolution.

All in all this is an attractively and enthusiastically written book, which is spoiled by huge gaps in the evidence for many of its main conclusions and also by the author's uncritical approach to the data which she does describe.

P. E. Bryant

P. E. Bryant is Watts professor of experimental psychology at the University of Oxford.

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BOOKS

PSYCHOLOGY

Do ants think?

Animal Thinking
by Donald R. Griffin
Harvard University Press, £15.40
ISBN 0 674 03712 X

Donald Griffin wishes us to acknowledge that other species may share our
subjective awareness of thought. As he
recounts, the taboo on mentalistic
accounts of animal behaviour has been
gradually receding during the past ten
years, he himself having contributed to
this process with his book *The Question
of Animal Awareness* (Rockefeller
University Press).

In support of his advocacy of "cognitive
ethology" - the study of the
behaviour of wild animals (as opposed
to the specialized testing of laboratory
ones) - Griffin examines a wide range
of species, but directs his most vigor-
ous arguments in the cause of the social
insects. These, he feels, have been
unjustly relegated to the position of
mindless robots, while great attention
has been given recently to the cog-
nitive achievements of chimpanzees and
other primates. To clear the way for
this, he spends some time countering
the views of 'inclusive behaviourists',
the term he uses to refer collectively to
followers of B. F. Skinner, who wish to
account for the results of laboratory
experiments without reference to the
mental states of the animals involved,
and those zoologists or behavioural
ecologists who analyse a natural
behaviour only in terms of its value in
the process of natural selection.

Griffin seems still to be far from
satisfied by the attribution to animals
of information processing capacity,
unconscious thought, or mere cog-
nition, and wishes to promote a sort
of animal existentialism, with the sub-
jective experience of individual creatures
given full causative status. This he
makes most explicit in his creative
efforts to imagine exactly what certain
species think about. Weaver ants may
be able to build nests because they can
think "Let's pull those two leaves
together"; a mother mason bee might
think "Now I want to close the rest of
this cavity", being aware at the same
time of the necessity of leaving some
air spaces; and a breeding redwing
blackbird, on catching a dragonfly,
must say to itself "This big insect will
feed those babies nicely. I'll take it
back to them and catch something else
for myself".

The essence of consciousness,
according to Griffin, is the ability to
think about objects, whether or not
whether or not they are immediately
present, as a method of guiding be-
haviour. Thinking thus has an adaptive
function, although functionalism is
rejected as an explanation of it. Even
with other persons there is an "other
minds" problem in knowing how far
they share our subjective experiences
and it is therefore necessary at some
point to appeal to observables. For
animals the observable indices of
thinking may be neurophysiological -
the anatomy or electrical or chemical
activity of their "thinking organs"; or
behavioural - thought may be invoked
if a pattern of behaviour is learned, is
rapidly changed, or satisfies some
criterion of complexity. On anatomy, Griffin
begins in a conventional material-
ist way, by identifying thinking with
the activity of complex nervous sys-
tems; then, after a brief flirtation
with vital cells and the pansychism of
A. N. Whitehead, he draws the line at
single-celled animals, and we are not
invited to contemplate the mental life
of *Paramecium* or *Amoeba*.

He hopes that, eventually, electrical
recordings from human brains will be
sufficiently closely tied to subjective
phenomena for these techniques to be
used as assays of mentality in other
species. However, in an unconventional
and unexpected twist, he suggests
that the small size and distributed
nature of arthropod nervous systems
may require these animals to bagu-
inate, rather than least thought, as a
form of neurophysiological economy.
Although it is true that overall size of
neural apparatus might be misleading
- an historical sample of computers



Seventeenth-century engraving, showing a group of dancing women
crazed by the moon. From James Hasset's *Psychology in Perspective*
(Harper & Row, £25.25).

would show size inversely proportional
to capacity - the similarity of the
human thinking organ to that of closely
related mammals is one of the few
secure axioms in the analysis of animal
psychology, and it would surely be
unwise to jettison it in this way.

On the behavioural side, again with
the interests of the social insects upper-
most, Griffin attacks the notion that
learning from experience should be the
criterion for thinking (though noting
with approval the fact that simple
kinds of learning can be found almost
everywhere in the animal kingdom). This
leaves him with behavioural com-
plexity, of one sort or another, as the
crucial test. First, he discusses optimal
foraging. Many species conduct their
searches for food in patterns that can
be fitted to equations of economic
efficiency selected by human investiga-
tors. The order in which a bumble-bee
visits flowers, or the length of time
spent by wags searching a given
covelet for emerging flies, may be
close to mathematical optima, but this
in itself does not say a great deal about
the mechanisms of choice involved,
and even less about subjective pro-
cesses. Nevertheless, it is now clear that
memory for the location of hoarded
food is very accurate in several higher
vertebrate species (in particular, the
smaller tits) and this certainly requires
explanatory theories which allow for
prolonged storage of spatial informa-
tion. There is much current and pre-
vious work on the memory capacities
of higher vertebrates, but Griffin does
not give this much weight.

Similarly, relations between prey
and predators include a number of
indications of foresight and cognitive
complexity - cooperative hunting by
lionesses and distraction displays by
ground-nesting birds are mentioned -
and I would have thought that the
utility of thinking ahead, even for a few
seconds or minutes, would have been a
central issue in cognitive ethology -
Griffin, however, argues against any
connection between foresight and con-
scious thought, since even he is re-
luctant to claim much foresight for in-
sects. In the chapter on animal build-
ing, he suggests that such activity
always indicates the use of conscious
templates or ideas about the desired
outcome. Caddis fly larvae, which
build themselves protective cases, and
wasps, many of which build elaborate
nests, are given pride of place, as
demonstrating architectural talents
equal to those of nest-building birds or
dam-building beavers. However,
although there are a number of in-
teresting experimental results on the
intelligence of some of the more com-
plex insects, such as bees, wasps, and
beavers - it may be a mistake, even
for the human species, to assume that
specialized skills in the construction of
shelters are necessarily associated with
intellectual accomplishments of other
kinds.

However, if we were to use large-
scale building works, complex social
organization, and meaningful com-
munication, as observable criteria for
inner psychological excellence, we
would be forced to acknowledge that
ants and honey-bees should come
somewhere near the top of the scale.
Griffin complains that ethologists and
psychologists have neglected these
species, but this is hardly the case.
There has been an upsurge recently in
the number of tests put by ex-
perimental psychologists to honey-
bees (most of which they pass); and the
Schwartzblat or waggle dance by
which worker bees communicate to

each other the distance and direction
of valuable food sources (or of suitable
sites for a new hive, when swarming)
has been described often enough
already. Although insects will no
doubt continue to be studied (and their
behavioural characteristics deserve
consideration in theories of infor-
mation transmission in biological sys-
tems) in relation to arguments about
conscious thinking, Griffin has under-
estimated the importance of the kin-
ship assumption. It is not just a pre-
judice to say that species most similar
to our own in genes and/or brain
anatomy are most likely to share our
psychological characteristics. Since
there are no other criteria apart from
our own experience for conscious
thinking, this is in fact the main thing
we have to go on.

As Griffin points out, neither the
involvement of language, nor indi-
vidual learning, nor social or be-
havioural complexity is really any
guide to the subjective intensity of a
human experience such as sneezing;
but, as far as thinking, as opposed to
feeling, goes, he has woefully ne-
glected the role of human language,
and misconstructed social complexity.
Few would now agree that species without
human language have any opportunity
to share in the greater part of human
thought, starting with such everyday
necessities as "next Wednesday". And
although Griffin mentions several
times the Jolly-Humphrey hypothesis
that human cognitive capacity evolved
as a device for regulating personal
interactions, he resists the obvious
implication that the insect societies, in
which personal identity plays no part
whatever, must operate along quite
different lines.

Stephen Walker

Stephen Walker is lecturer in psychol-
ogy at Birkbeck College, London, and
author of *Animal Thought*.

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BOOKS

PSYCHOLOGY

Degrees of temper

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theories and applications
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Clive Fletcher
Methuen, £2.95
ISBN 0 416 33760 0
Levels of Personality
by Mark Cook
Holt, Rinehart & Winston, £5.95
ISBN 0 03 910516 4

Both intended for the senior psychol-
ogy undergraduate, these two books
complement each other very well.
Vivian Shackleton and Clive Fletcher's
comprehensive but concise account of
individual differences in cognition and
personality covers practice as well as
theory, and takes the nature-nurture
debate as its major theme linking its
nine chapters. Mark Cook's book on
individual differences in personality
uses the framework of explanatory
levels to connect its twelve chapters.

Shackleton and Fletcher first display
the two main lines of scientific psychol-
ogy: the experimental and correlation-

al approaches. The former hopes to
explain psychological processes in
terms of general theories in which the
effects of individual subject variations
have been pushed into the shadows by
the imposition of universal models.
Whereas the latter pushes individual
subject variations into the limelight by
the use of factor analysis - a mathemat-
ical procedure originally devised by
Karl Pearson which, when applied to
psychological data, can reduce a multi-
tude of scores on intelligence and
personality tests to a few significant
dimensions.

The logic of factor analysis is ex-
amined with reference to some "possi-
ble" cognitive test results. However,
although this allows for instructional
efficiency, as does the use of fictitious
observations by Cook to illustrate
personality factors, there are atten-
dable dangers. It is all too easy for
students and even research workers to
confuse the clean, expected results of
fiction with the messy results from
actual experiments.

After a brief discussion of Sir Fran-
cis Galton's work on hereditary
genius, Shackleton and Fletcher con-
sider in some depth the factorial
theories of intelligence propounded by
Charles Spearman, Cyril Burt, L. L.
Thurstone, J. P. Guilford and R. B.
Cattell. They do not, however, make
Cook's extraordinary claim that "the
correlation coefficient was invented by
Charles Spearman in 1907"; they do,
on the other hand, succeed in ignoring
the important contributions of God-
frey Thomson to the analysis of human
abilities. There is a good discussion of
recent attempts by C. R. Brand (in-

in the process of simplification, and the
distortion that may flow from it. The
content then is broad, cryptic and
necessarily shallow, though not too
damagingly so. While the authors
frequently find themselves on thin ice,
their confidence is admirable and their
general guidance sound.

Although the book gets off to a bad
start with two errors in chapter one
("psychophysiological" for "psycho-
physical" on page one; and "the wrong
one of Ulric Neisser's two major
textbooks cited in the first set of
references), mistakes are few and most
amount to fine distinctions being blurred
rather than intellectual bricks
being dropped. Its principal shortcom-
ing is that the structure of the study and
revision process is unduly complex.
The seven chapters are prefaced by a
sample of representative examining
questions as a focus for the
reader's attention. Each of these chap-
ters is divided into subtopics preceded
by a set of more circumscribed "di-
agnostic questions", with answers at
the end of the section. In addition,
"self-assessment" questions are inters-
persed throughout the text, with
answers in an appendix. The student
needs several passes through the mate-
rial, aided by much sideways referenc-
ing to parallel information sources
("techniques boxes", a historical
chart, and so on). This complexity of
structure is uncomfortably at odds with
the simplified treatment of the con-
tent. Intending students will need to be
warned that hours of potentially diz-
zying effort are required if the authors'
advice is followed to the letter.

Moreover, there is little scope for
variation in the plan of campaign. Its
inflexibility relative to the needs and
abilities of the individual student make
it likely that the work produced will be
characterized by dull uniformity. In
this context it is a pity that the authors
did not capitalize on research on
mnemonic techniques by suggesting
ways to construct visual and other
representations of the material to be
remembered, since this would enable
the student to operate constructively in
the learning process and in a fashion
that reflected and amplified his or her
individual contribution to it.

This is an interesting series that will
be well received by students, and with
reservations I can recommend this first
volume to them.

Paul Barber

Paul Barber is lecturer in psychology at
Birkbeck College, London.

A fourth edition of Lee J. Cronbach's
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However, this scrupulousness is mar-
red by the apparent approval of the
authors for Steven Jay Gould's asinine
cynicism concerning the exclusive im-
portance of studying identical twins
reared apart. It is surely the weight of
the total evidence from all familial
studies which is crucial to this debate.
Creativity is adequately covered in a
separate chapter. This is followed by
reviews of personality, motivation,
assessment, and applications.
Although there is much overlap of
these topics with the second book,
Cook manages to achieve a more
successful integration of disparate per-
sonality theories by an appeal to the
notion of "levels". For, as T. C.
Schneirla (1951) has pointed out, "the
theory of levels" may offer a useful
and effective way in which to evaluate
both the biological and psychological
properties of individuals.

The human personality is viewed as
a composite of top-level surface be-
haviours connected "on-line" to bot-
tom-level biological, phenomenologi-
cal, and motivational processes with
two intermediate levels corresponding
to each of these three lines. Such a
scheme enables us to discern a con-
nection between, for example, Hans
Eysenck's work on eye-blink condi-
tioning and Sigmund Freud's theory
of psychosexual stages. The exposi-
tion of Eysenck's theory about human
temperament is a model of clarity,
although a consideration of limitations
in the theory would have benefited
from a reading of Eysenck's 1960
paper, in which he argues that "early
failures of some predictions should not
be taken too seriously".

Other chapters are devoted to the
self concept, motives and instincts, and
psychoanalysis. The book ends with
two examples of real personalities: the
school bully and the sexual deviant.
Although in the main Cook writes with
verve and enthusiasm, his social re-
sponsibility must be seriously ques-
tioned when he claims that the "true
paedophile" tends "to have the child's
consent".

Both books can be strongly recom-
mended for use on courses which
recognize the necessity of understand-
ing why people differ in their cognitive
capacities and personality styles.

R. E. Rawles

R. E. Rawles is a lecturer in psychology
at University College London.

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Applications should be made to the Director of the School of Geography, University of New South Wales, Sydney 2052, Australia. Further information from Professor J. A. Mather, Acting Head of School, can be obtained from the University of New South Wales, Sydney 2052, Australia. 30 November 1984.

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Research School of Pacific Studies, Australian National University, Canberra. The Australian National University is seeking to fill a fixed term position in the field of Japanese politics at the level of Lecturer/Research Fellow for a fixed term of three years. The applicant will be expected to spend half of his or her time teaching courses in Japanese politics and related subjects in the Department and half engaged in the research program. The teaching will involve work at both the undergraduate and graduate levels. The research program will be in the area of Japanese politics and related subjects. The position is available from mid-February 1985 and appointment will be for a fixed term of three years. Further information from Professor J. A. Mather, Acting Head of School, can be obtained from the University of New South Wales, Sydney 2052, Australia. 30 November 1984.

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Applications are invited for the position of Chief Librarian of the La Trobe University Library. The position is vacant following the appointment of Mr. C. L. Lusk to the position of Deputy Chief Librarian. The successful candidate will be responsible for the overall management of the library and will report to the Vice-Chancellor. The position is available from mid-February 1985 and appointment will be for a fixed term of three years. Further information from Professor J. A. Mather, Acting Head of School, can be obtained from the University of New South Wales, Sydney 2052, Australia. 30 November 1984.

University of Manchester
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Applications are invited for LECTURESHIPS/SENIOR LECTURESHIPS/ASSOCIATE PROFESSORSHIPS in the following Departments:

DEPARTMENT OF PHYSIOLOGY (3 posts)
Applicants must hold a D.Phil., M.D., Ph.D. or equivalent degrees. Demonstrable teaching and research interest as well as experience are specifically sought for:

Post A: (appointment will be for 1 year); Applicants must be qualified in endocrinology.

Post B: Applicants must be qualified in cardiovascular and/or respiration.

Post C: Applicants must be qualified in neurophysiology.

DEPARTMENT OF ANIMAL SCIENCE (4 posts)
Posts A & B (Animal Production/Breeding): Applicants should preferably have a Ph.D. in Animal Breeding or Production and have contributed to their field as evidenced by publication in internationally recognized journals. The successful candidates will be expected to teach a course in Animal Production/Breeding to third year Agricultural Science and second year Veterinary students and for the teaching of courses in production by ruminant and monogastric animals. They will also be responsible for the establishment of research programmes in animal production or animal breeding and supervision of postgraduate students of these disciplines.

Post C (Animal Physiology): Applicants should have a good honours degree in Agriculture and preferably a Ph.D. in Animal Physiology. The successful candidate will teach basic courses on anatomy and physiology of farm animals to first year Agricultural students and will be required to establish and conduct research programmes in one or more of the following fields: reproduction, lactation, growth or climate physiology. Applicants must provide evidence of ability to do so by having published in international journals.

Post D (Agricultural Biochemistry): Applicants should have a good first degree in Agriculture or equivalent with appropriate postgraduate qualifications, preferably a doctorate in Agricultural Biochemistry. Relevant teaching experience and evidence of appropriate research activity would be an advantage. The successful candidate will be responsible for an undergraduate course in Agricultural Biochemistry including organization of practical classes and the Biochemistry laboratories of the Department.

DEPARTMENT OF ANATOMY (2 posts)
Applicants should preferably be medically qualified and/or have experience in Histology or Neuroanatomy. Overseas training scheme available for Zimbabwean citizens.

DEPARTMENT OF HAEMATOLOGY
Applicants should preferably have experience of both laboratory and clinical haematology together with teaching experience at undergraduate and postgraduate level.

DEPARTMENT OF MATHEMATICS (2 posts)
Applicants should possess preferably a doctorate in applied mathematics (general, control theory, numerical analysis), statistics or pure mathematics.

DEPARTMENT OF CROP SCIENCE
Post A (Crop Production Agronomist): Applicants should possess postgraduate qualifications and experience. Extensive knowledge and experience required in crop production in the tropics and preferably in Zimbabwe for both subsistence and commercial agriculture. Teaching responsibilities include two undergraduate courses in crop production, on-farm student activities, and supervision of postgraduate students. Details of publications and experience required.

Post B (Seed Scientist): Applicants should possess postgraduate qualifications and research experience, plus experience in teaching weed science and crop ecology and physiology at the undergraduate level. Candidates should also have published in international journals. The successful candidate will be responsible for teaching weed science and crop ecology and physiology at the undergraduate level. Candidates should also have published in international journals. The successful candidate will be responsible for teaching weed science and crop ecology and physiology at the undergraduate level. Candidates should also have published in international journals.

DEPARTMENT OF CIVIL ENGINEERING
Applicants should possess a good first degree plus satisfactory post-graduate qualifications and experience. The successful candidate will be responsible for teaching and supervising students in the Department of Civil Engineering. The position is available from mid-February 1985 and appointment will be for a fixed term of three years. Further information from Professor J. A. Mather, Acting Head of School, can be obtained from the University of New South Wales, Sydney 2052, Australia. 30 November 1984.

DEPARTMENT OF CLINICAL PHARMACOLOGY
Applicants should be medically qualified and ideally have the M.R.C.P. or equivalent higher qualification. The work of the Department includes teaching medical and pharmaceutical students, basic and clinical research and patient care in a teaching unit in the medical school at the Parfityan Hospital.

Applications are invited for RESEARCH FELLOWSHIP in the following Department: University Lake Kariba Research Station (Appointment will be for 2 years in the first instance); Applicants should be experienced scientists with a specialty that is of relevance to the multidisciplinary scope of the University Lake Kariba Research Station; to study Lake Kariba and its environs.

SALARY SCALES:
(New-entrant)
Lecturer: £21,040-£17,570
Senior Lecturer: £21,040-£20,070 (including allowance)
Associate Professor: £21,040-£20,070 (including allowance)
Associate Professor: £21,040-£20,070 (including allowance)

N.B. Salary appointed to the Department of Civil Engineering receive a Professional Supplement as follows: Lecturer £23,000 per annum, Senior Lecturer £28,700 per annum, Associate Professor £28,400 per annum.

(Medical - inclusive of the Professional Supplement)
Lecturer: £21,040-£20,070
Senior Lecturer: £21,040-£20,070
Associate Professor: £21,040-£20,070

N.B. In addition staff appointed to the above grades receive allowances as follows: Lecturer £22,200-£18,150 per annum, Senior Lecturer £23,100-£18,600 per annum, Associate Professor £23,500-£18,600 per annum, Professor £24,100 per annum.

Research Fellowships
Research Fellow Grade I: £28,110-£10,128
Research Fellow Grade II: £21,724-£13,838
Senior Research Fellow: £21,020-£16,464

CONDITIONS OF SERVICE: Both permanent and short-term contracts are offered. Persons who are not Zimbabwean citizens may be appointed only on short-term contracts with an initial period of two years. Short-term contracts may, in exceptional cases, be extended.

Six copies of applications, giving full personal particulars (including full name, place and date of birth, etc.), qualifications, employment and experience, present salary, date of expiry, telephone number and names and addresses of three referees, should be addressed to the Director, Appointments and Personnel, University of Zimbabwe, PO Box 167, Mount Pleasant, Harare, Zimbabwe (tel: 4-182 ZW). Candidates in the UK should also send an additional copy to the Secretary General, Association of Commonwealth Universities (ACU), 24 Gordon Square, London WC1H 0DF, from whom further particulars of all posts except the Professorship in the Department of Rehabilitation and the Lake Kariba Research Station Research Fellowship obtainable.

Closing date for receipt of applications is 3 December 1984. (17165)

University of Lancaster
CHAIR OF ASTROPHYSICS
TENABLE AT IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY
The Senate invites applications for a Chair of Astrophysics. The successful candidate will be responsible for teaching and supervising students in the Department of Astrophysics. The position is available from mid-February 1985 and appointment will be for a fixed term of three years. Further information from Professor J. A. Mather, Acting Head of School, can be obtained from the University of New South Wales, Sydney 2052, Australia. 30 November 1984.

University of Liverpool
WILLIAM ROSCOPPE CHAIR OF CONTINUING EDUCATION
Applications are invited for the William Roscoppe Chair of Continuing Education. The successful candidate will be responsible for teaching and supervising students in the Department of Continuing Education. The position is available from mid-February 1985 and appointment will be for a fixed term of three years. Further information from Professor J. A. Mather, Acting Head of School, can be obtained from the University of New South Wales, Sydney 2052, Australia. 30 November 1984.

University of Liverpool
LECTURER/SENIOR LECTURER
(Continuing) Department of Social Studies. The Department of Social Studies invites applications for a Lecturer or Senior Lecturer in Social Studies. The successful candidate will be responsible for teaching and supervising students in the Department of Social Studies. The position is available from mid-February 1985 and appointment will be for a fixed term of three years. Further information from Professor J. A. Mather, Acting Head of School, can be obtained from the University of New South Wales, Sydney 2052, Australia. 30 November 1984.

University of Liverpool
LECTURER (CONTINUING) DEPARTMENT OF POLITICAL SCIENCE
The Department of Political Science invites applications for a Lecturer (Continuing). The successful candidate will be responsible for teaching and supervising students in the Department of Political Science. The position is available from mid-February 1985 and appointment will be for a fixed term of three years. Further information from Professor J. A. Mather, Acting Head of School, can be obtained from the University of New South Wales, Sydney 2052, Australia. 30 November 1984.

University of Liverpool
LECTURER (CONTINUING) DEPARTMENT OF SOCIAL STUDIES
The Department of Social Studies invites applications for a Lecturer (Continuing). The successful candidate will be responsible for teaching and supervising students in the Department of Social Studies. The position is available from mid-February 1985 and appointment will be for a fixed term of three years. Further information from Professor J. A. Mather, Acting Head of School, can be obtained from the University of New South Wales, Sydney 2052, Australia. 30 November 1984.

University of Liverpool
LECTURER IN BEHAVIOURAL SCIENCES IN MEDICINE
The Department of Behavioural Sciences in Medicine invites applications for a Lecturer. The successful candidate will be responsible for teaching and supervising students in the Department of Behavioural Sciences in Medicine. The position is available from mid-February 1985 and appointment will be for a fixed term of three years. Further information from Professor J. A. Mather, Acting Head of School, can be obtained from the University of New South Wales, Sydney 2052, Australia. 30 November 1984.

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Universities continued

PRIFYSGOL CYMRU THE UNIVERSITY OF WALES

CYFARWYDDWR CANOLFAN UWCHYFFRYDIAU CYMRAEG A CHE

Polytechnics continued

KINGSTON POLYTECHNIC COMPUTER CENTRE

The Computer Centre at the Polytechnic provides a comprehensive computing service to meet both the academic and administrative requirements of the institution.

The COMPUTING EDUCATION CENTRE (CEC) was set up three years ago as a business enterprise to assist companies and other organizations to develop their use of information technology. It operates as a unit working to a business plan and offers a range of short courses and consultancy, supported by a team of four full-time staff. A number of organizations already make regular use of the services. The CEC operates under the general direction of the Director of the Computer Centre and can draw upon the resources of the whole Polytechnic on setting up projects and courses. The following posts are available:

HEAD OF CEC — Principal Lecturer grade

This is a key post within the CEC. The person appointed will lead the CEC team. Together with the Director of the Computer Centre, he/she will develop and control the services provided by the CEC. He/she will work to a business plan and make a significant contribution to lecturing and consultancy in addition to leading the team. The successful applicant will be a good communicator and have a good knowledge of the application of computing to provide services of business, coupled with a general understanding of the needs of all business users. Experience in the use of microcomputers is essential.

LECTURER/CONSULTANT Two-year appointment, Senior Lecturer/Lecturer II grade

The person appointed will work under the direction of the Head of CEC. The range of duties will vary from giving introductory lectures on computing to advising firms and organizations on the use of information technology. He/she will be expected to contribute to the marketing and development of the CEC's work and to develop particular expertise within its portfolio. Experience in the use of microcomputers is essential.

Applicants should have a good honours degree or equivalent professional qualification in any relevant discipline.

Salary grades: Principal Lecturer: £13,095-£14,580 (bar) — £16,487 + £345 London allowance. Senior Lecturer: £11,175-£14,081 + £345 London allowance. Lecturer II: £7,648-£10,961 — £945 London allowance.

Further details and application forms (To be returned by 23rd November) from Personnel Officer, Kingston Polytechnic, Penryn Road, Kingston upon Thames, KT1 2EE. Tel: 01-549 1358 ext 267. (020506)

LIVERPOOL POLYTECHNIC

FACULTY OF BUSINESS AND MANAGEMENT STUDIES DEPARTMENT OF ACCOUNTING AND FINANCE PRINCIPAL LECTURER

Applications are invited from suitably qualified candidates to contribute mainly to the BA (Honours) Accounting and Finance degree teaching programme and to develop research within a large department which caters for the Accounting, Banking and Insurance Professions.

Candidates must be able to demonstrate both teaching and research ability (via an established record, including publications) and the potential to maintain and extend forms of staff development in the department.

Any potential applicants are invited to telephone J.B. Goodall (051 207 3581 Ext. 2406) 213,095-218,467.

For further particulars and an application form contact the Personnel Officer, Liverpool Polytechnic, 100 Mount Pleasant, Liverpool L3 5UX. Tel: 051-207 3581 Ext. 2619/2820.

Closing date is 14 days from the appearance of this advertisement.

Liverpool Polytechnic is an Equal Opportunity Employer and welcomes applications irrespective of race, sex, marital status or disability. (020506)

Manchester Polytechnic

Department of Law

Head of Department of Law (Grade VI)

Applications are invited for the post of Head of Department of Law. The Department offers full-time and part-time courses leading to BA (Hons) in Law, courses for CPE and Law Society, and a course for Magistrates' Clerks. There is service work to degree and professional courses in other faculties. The total enrolment is approximately 750 students and there are 47 full-time staff.

Salary Scale: £17,387 — £19,170 per annum.

For further particulars send a self-addressed envelope marked "L44" to the Secretary, Manchester Polytechnic, All Saints, Manchester, M15 6BH to whom letters of application, stating relevant career details, should be sent to arrive by 30th November 1984.

(020506)

DEPARTMENT OF ACCOUNTING AND FINANCE

LECTURER GRADE II/ SENIOR LECTURER IN ACCOUNTING AND FINANCE (TWO POSTS) (£7,648-£14,061 per annum)

To teach in at least two of the areas of auditing, financial accounting and taxation, primarily to advanced level professional and degree students. One of the two posts will be a specialist in the area of taxation and applicants for both positions should have appropriate academic and professional qualifications.

Further details and form of application are available from the Staff Officer, Trent Polytechnic, Burton Street, Nottingham NG1 4BU. Closing date: 23 November 1984.

TRENT POLYTECHNIC NOTTINGHAM

Bristol Polytechnic Department of Management

LECTURER II/SENIOR LECTURER (FINANCE)

The Department of Management wishes to strengthen its teaching resources in the areas of management and financial accounting.

It is looking for a Lecturer II/Senior Lecturer who will act as a subject leader for Finance in the Department. The successful candidate will include teaching management accounting and financial accounting on full-time and part-time postgraduate and post-experience courses, particularly those leading to the CIMA, CIMA, and ACCA qualifications. There will also be opportunities to contribute to various in-orientation management development courses and related activities, both in the private and public sectors.

Flexibility, and the proven ability to teach both formal qualification courses and management accounting, are key criteria for this appointment. Specialized knowledge in management accounting, financial accounting, and financial management is essential. The successful candidate will also be expected to contribute to the development of the department's research and consultancy activities.

The appointment will be made from 1st January 1985 or as soon as possible thereafter.

Salary: £11,175-£14,081 per annum. £345 London allowance. £1,175-£1,408 London allowance.

This appointment will be made on the appropriate scale according to relevant previous service/experience. (Professional accountancy qualifications are essential.)

Any potential applicants are invited to telephone J.B. Goodall (051 207 3581 Ext. 2406) 213,095-218,467.

For further particulars and an application form contact the Personnel Officer, Liverpool Polytechnic, 100 Mount Pleasant, Liverpool L3 5UX. Tel: 051-207 3581 Ext. 2619/2820.

Closing date is 14 days from the appearance of this advertisement.

Liverpool Polytechnic is an Equal Opportunity Employer and welcomes applications irrespective of race, sex, marital status or disability. (020506)

READER

The Department of Management wishes to strengthen its teaching resources in the areas of management and financial accounting.

It is seeking a Reader who will develop and manage the implementation of a research programme for the Department, working in close collaboration with the Head and existing staff.

The Reader's key tasks will include identifying opportunities for funded research, organizing the Department's research programme, and managing the resulting research programme. The Reader will also be expected to take initiatives to publicize and disseminate information about the Department's research.

The appointment envisaged requires a senior research team-building and project management skills. A proven track record in this area is more important than the specific subject areas or disciplines in which candidates have researched.

The appointment will be made from 1st January 1985 or as soon as possible thereafter.

Salary: £11,175-£14,081 per annum. £345 London allowance. £1,175-£1,408 London allowance.

This appointment will be made on the appropriate scale according to relevant previous service/experience. (Professional accountancy qualifications are essential.)

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PLEASE MENTION THE T.H.E.S.

WHEN REPLYING TO ADVERTISEMENTS

Newcastle upon Tyne Polytechnic

CAREERS & APPOINTMENTS OFFICER

Ref APC 65/84

The person appointed to this challenging post will have a positive interest in the general aims of the Student Services.

Preferably from an Engineering, Technology or Science background, you will have considerable relevant experience in industry or commerce and hold a degree or professional qualification.

A Careers Guidance qualification is not a prerequisite, though a commitment to developing relevant skills, together with the capacity to promote good relationships with employers, students, teaching and other staff is essential.

NJC Salary & Conditions: £11,052-£13,548 p.a. (pay award pending).

For further details and application form, please call our 24 hour telephone answering service (0632 333333) or write enclosing a foolscap size self-addressed envelope to: Mr. J. B. Goodall, Newcastle upon Tyne Polytechnic, Eliaison Building, Eliaison Place, Newcastle upon Tyne NE1 6BT. To whom completed forms should be returned by 23.11.84. (55357)

City of London Polytechnic

TEMPORARY LECTURER II IN ECONOMICS

A vacancy has occurred in the Department of Economics for a lecturer to teach economic theory at the undergraduate level. The appointment of at least one degree in Economics on 1 January 1985 and the person selected will be highly capable in macro and micro economics and sharply aware of the relationship between these two branches. He or she should have a good first degree in economics, most probably a post-graduate qualification in the subject and a record of recent research and publication. Teaching experience is also to be desired as is competence in the applications of economics in at least one area.

Salary: £8,535 to £13,086 including London Weighting of £887 p.a.

For further details and an application form please write on a postcard to the Staff Recruitment Officer, City of London Polytechnic, 117 Hound Street, London EC2A 4DU. Please quote reference 84/70 (55316)

The appointment will be made from 1st January 1985 or as soon as possible thereafter.

Salary: £11,175-£14,081 per annum. £345 London allowance. £1,175-£1,408 London allowance.

This appointment will be made on the appropriate scale according to relevant previous service/experience. (Professional accountancy qualifications are essential.)

Any potential applicants are invited to telephone J.B. Goodall (051 207 3581 Ext. 2406) 213,095-218,467.

For further particulars and an application form contact the Personnel Officer, Liverpool Polytechnic, 100 Mount Pleasant, Liverpool L3 5UX. Tel: 051-207 3581 Ext. 2619/2820.

Closing date is 14 days from the appearance of this advertisement.

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Colleges and Institutes of Higher Education continued

HEAD OF DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING (GRADE V) Salary £15,390 — £17,091 (Re-advertisement)

Applicants should hold a degree or higher degree in a discipline directly relevant to the work of the Department, preferably in Electronic Engineering, and be corporate members of an appropriate professional institution. The successful candidate will have demonstrated the potential to take the Department into the post-Finniston/continuing education/micro-electronic period ahead and an ability to manage a group of highly qualified engineers who are responsible for a wide range of courses which include a CNA degree.

As part of the Faculty of Engineering of the second largest non-polytechnic in the country, the Department has a key role to play and under the right leadership could rapidly attain Grade VI status. Substantial research and consultancy work already exists in the Department and it is anticipated that this would increase with time.

Further details and application form may be obtained from the Deputy Registrar, to whom completed applications should be returned by 26th November 1984.

BOLTON INSTITUTE OF HIGHER EDUCATION

Deane Road, BOLTON BL3 5AB

Tel: Bolton (0204) 28851

TRINITY AND ALL SAINTS' COLLEGE

BURSAR

Applications are invited for the post of Bursar of Trinity and All Saints' College, a Roman Catholic Voluntary College, which has some 1100 undergraduate and postgraduate students, of whom 300 are residents.

Applicants should have relevant administrative experience, hold a professional qualification in accountancy or business administration, and be in sympathy with the aims of a Roman Catholic institution.

Salary is on the Local Government scale P02 (£13,725-£15,357 — currently under review). Scale 48/51, though an appointment above this may be considered.

Date of appointment, not later than 1 June, 1985.

Further particulars and application form may be obtained from the Principal's Office, Trinity and All Saints' College, Brownlie Lane, Horsforth, Leeds, LS18 5HD. Telephone: 0532 884841.

Closing date for applications: 21 November, 1984. (17115)

SOUTH GLAMORGAN COUNTY COUNCIL

HIGHER EDUCATION (CARDIFF) FACULTY OF SCIENCE

TEMPORARY LECTURER 1/2 IN HUMAN PHYSIOLOGY POST NO. SL/61(T)

Applications are invited for the above appointment for the period 1 January 1985 to 31 July 1985, during the absence of the permanent holder. Candidates should hold a good honours degree in Physiology and preferably have post-graduate research and teaching experience. The person appointed will teach Human Physiology within the University of Wales Honours Degree in Dietetics and Nutrition.

Salary: £8,535-£13,086 depending on qualifications.

Further particulars and application forms may be obtained from the Principal's Office, South Glamorgan Institute of Higher Education, Cyncoed Road, Cardiff CF10 2XQ (Telephone: (0222) 768758).

Completed applications should be returned within fourteen days of the publication of this advertisement. (020613)

Teesside Polytechnic

Department of Computer Science

CNA DIPLOMA IN PROFESSIONAL STUDIES IN EDUCATION (Computing)

A one year full-time course

is offered for teachers who have some basic knowledge of computing and who wish to increase their knowledge and obtain a formal qualification. Because of the high demand for teachers with a computing qualification, this course has been designed with a view to providing a comprehensive training programme for teachers in the field of computing.

For further details and application form, please write to: Mr. J. B. Goodall, Teesside Polytechnic, 117 Hound Street, London EC2A 4DU. Please quote reference 84/70 (55316)

The appointment will be made from 1st January 1985 or as soon as possible thereafter.

Scholarships

The University of Sydney

Committee for Postgraduate Studies

Applications are invited for a LAW SCHOLARSHIP

which is open to law graduates of the University of Sydney or law graduates of other universities who wish to pursue advanced legal studies in the Faculty of Law within the University of Sydney.

Successful applicants will be required to enrol for a higher degree.

The scholarship is valued at \$A10,500 per annum with a travel allowance and a possible grant-in-aid.

Further details and application form may be obtained from the Registrar, University of Sydney, Sydney, New South Wales 2006.

Closing date for applications: 21 November, 1984. (17115)

LAW SCHOLARSHIP

which is open to:

(a) law graduates of the University of Sydney who wish to pursue advanced legal studies in the Faculty of Law within the University of Sydney.

(b) law graduates of other universities who wish to pursue advanced legal studies in the Faculty of Law within the University of Sydney.

The scholarship is valued at \$A10,500 per annum with a travel allowance of up to \$A2,000.

The two scholarships are ordinarily tenable for one year but may be renewed for a further year.

Applications are to be addressed to the Registrar, (Scholarships Office), University of Sydney, Sydney, New South Wales 2006.

Closing date for applications: 21 November, 1984. (55316)

Hillcroft College for Women

COURSE TUTOR

To teach Social Policy and Social Administration on two year Social Studies Course leading to CNA A Work Certificate. Candidates should have experience in social work and in teaching mature women students and if possible be qualified to teach in the field of Social Policy and Social Administration.

For further details and application form, please write to: Mr. J. B. Goodall, Hillcroft College, 117 Hound Street, London EC2A 4DU. Please quote reference 84/70 (55316)

The appointment will be made from 1st January 1985 or as soon as possible thereafter.

Administration

GENERAL SECRETARY

This is an administrative job with a charitable body in Highgate, North London, accommodating some 50 elderly ladies of professional background in their individual private rooms.

The present General Secretary will be retiring shortly because of his ill-health.

Responsibilities under the Committee of Management are comprehensive but the emphasis is upon bursarial duties, including accounting, finance, maintenance, staff and office management, and some secretarial services. Social work, residential care and medical supervision are the concern of professional staff and visiting practitioners, but the General Secretary is responsible to the Committee for co-ordination and oversight of the provisions for pastoral care.

Managerial and administrative experience is essential. It will be most relevant if gained in a social work context. Age, up to about 60, is not a critical factor.

Salary for negotiation up to about £12,000 p.a.

Letters of enquiry and application will be handled personally and in confidence by the consultant.

M. J. Graham-Jones, Charity Appointments, 146 Queen Victoria Street, London EC4V 4HN

Charity Appointments

COUNCIL FOR EDUCATIONAL TECHNOLOGY

seeks applications for the post of

Assistant Director

The post will become vacant on 1 February 1985 when Mr Vincent Thompson leaves to take up a new appointment.

The Council is the publicly funded central organisation charged with developing the application of educational technology to all levels of education and training throughout the United Kingdom.

An Assistant Director contributes to the formulation of strategic and programme policy and takes full managerial responsibility for defined aspects of the Council's work. The allocation of duties to the vacant post will depend upon the background of the person appointed, but will certainly contain responsibility for parts of the development programme.

Applicants will need to be conversant with new information technologies and aware of their implications for education and training. They must have sound managerial and administrative experience and be used to working with senior staff in education and training and in the government service. The Council's activities are organised on a project team basis, and applicants must be prepared to organise and control varying groups of staff working towards defined objectives.

Salary will be on the scale £15,047 to £19,917 inclusive of London Weighting and Superannuation allowances.

Fuller details of the Council's work are available. Written applications (no form) accompanied by full curriculum vitae should reach the Director of CET by 14 December 1984. Envelopes should be marked AD in the bottom left hand corner.

CET COUNCIL FOR EDUCATIONAL TECHNOLOGY

3 Devonshire Street, London W1N 2BA. (17164)

Kingston Polytechnic Students' Union

GENERAL MANAGER

Experience in staff management, administration and promotion of services essential. Knowledge of all aspects of student union desirable.

Starting salary not less than £12,000 p.a.

For further particulars etc. Write to: Peter Hogg, President, Kingston Polytechnic Students' Union, Penryn Road, Kingston upon Thames, Surrey, (55355) H18

Teach on Exchange in USA

Qualified British teachers/lecturers of all subjects with 5 years experience in teaching full-time in the UK are invited to apply for post exchange appointments to the USA during the 1985/86 academic year.

Teachers/lecturers are seconded on full UK salary with all increments and pension and social security rights safeguarded. Expenses and a cost of living allowance are payable.

Further details and application form may be obtained from: Mr. J. B. Goodall, Central Bureau, Seymour House, Seymour Avenue, London W1R 9PE. Tel: 486 8101. Ext. 248/258.

The closing date for completed applications has been extended to 17 December 1984. (55355) H18

Research and Studentships

University of Newcastle upon Tyne

Department of Civil Engineering

SENIOR RESEARCH ASSOCIATE

Applicants are invited from postgraduate students for the above post within the new-formed Resource Systems Research Unit. The post holders will contribute to a joint multi-disciplinary research programme with the Institute of Hydrology, which will be concerned with the development of mathematical models of the transport of pollutants in river basins and with the use of such models in the management of water resources. Applicants should have a first degree in a relevant subject in some area of hydrology, hydraulics or the physical sciences.

Starting salary for the Senior Research Associate post which is available from April 1985, will be up to £12,000 p.a. on the 1984/85 scale (£10,710-£14,125) and for the Research Associate post which is available from April 1985, will be up to £8,535 p.a. on the 1984/85 scale (£7,190-£11,515), according to qualifications and experience. (Salaries are under review.) Salaries are tenable for three years.

Applications (2 copies with the names and addresses of three referees) should be sent not later than 30th November 1984 to: Mr. J. B. Goodall, Department of Civil Engineering, University of Newcastle upon Tyne, Newcastle upon Tyne NE1 7RU. From whom further information can be obtained. (55304) H11

University of Surrey

Department of Educational Studies

RESEARCH OFFICER

Applications are invited for a Research Officer to work on a project concerned with the development of a training programme for nurses of the men-ally handicapped. The successful candidate should be a graduate in the social sciences, have previous research or nursing experience, and be an advocate of the use of audio-visual aids. The post will be full-time for fifteen months in the first instance, starting from January 1985.

The appointment will be in the salary range £6,500-£9,500 p.a. depending on qualifications and experience. Salaries are under review.

Further particulars are available on request from below or by telephone to Gailford 571821, Ext. 452.

Applications in the form of a curriculum vitae should be sent to the Personnel Officer, University of Surrey, Guildford GU1 2XH by 23 November 1984. (55355) H18

Overseas

Teach on Exchange in USA

Qualified British teachers/lecturers of all subjects with 5 years experience in teaching full-time in the UK are invited to apply for post exchange appointments to the USA during the 1985/86 academic year.

Teachers/lecturers are seconded on full UK salary with all increments and pension and social security rights safeguarded. Expenses and a cost of living allowance are payable.

Research and Studentships continued

University of Liverpool
Department of Electrical Engineering and Electronics

Applications are invited for the post of **SENIOR RESEARCH ASSISTANT** to participate in a project concerning the theoretical investigation of high pressure arc discharges sustained by currents up to 100kA.

The successful applicant will be expected to participate in a programme of work conducted in collaboration with the UK Switchgear Industry. The candidate should have a good knowledge of Mathematics and Physics. Theoretical and Applied Mathematics are encouraged to apply.

Initial salary range £7,920 - £8,920 per annum.

Application forms and further particulars may be obtained from The Registrar, The University, P.O. Box 147, Liverpool L69 3BX, or whose completed forms should be received not later than November, 1984. Quota Ref: RV/675, (53321) HT

University of Bath
School of Engineering
POST-DOCTORAL RESEARCH OFFICER

A small team investigating the dynamic behaviour of towed seabed surveying vehicles requires a **MATHEMATICIAN** to be responsible for computing and software development. The research is supported jointly by the SERC and the MOD and the appointment is for a 2 year period.

Applicants should hold or be completing a Ph.D., preferably in numerical methods and applied dynamics, and should be familiar with programming in Fortran. Software currently in use embodies C.D.U.S., sensors, mechanics and dynamics.

Some knowledge of hydrodynamics is desirable but not essential.

Starting salary up to £8,920 p.a. according to qualifications and experience.

Application forms from the principal Officer, University of Bath, Bath BA8 7AY, quoting ref: 17177 CV, closing date 23.11.84, (53311) HT

Adult Education continued

Field Consultant

The Adult Literacy and Basic Skills Unit (ALBSU) wishes to recruit an additional Field Consultant to work as part of its small London based team. Candidates should have significant experience of English as a Second Language work with adults as well as a commitment to the development of basic education in general. Experience of adult literacy and/or numeracy would be an advantage.

The Unit is the central focus for adult literacy and related basic skills work in England and Wales and is grant-aided by the Department of Education and Science and the Welsh Office Education Department. Among its functions, ALBSU sponsors a significant number of local development projects, allocates establishment grants to voluntary organisations, co-ordinates and provides training, produces and publishes teaching/learning materials and offers a consultancy and advisory service to local providing bodies.

ALBSU Field Consultants are based in London, although a considerable amount of travelling throughout England and Wales is an essential part of the job. The commencing salary will be between Point 42 (£13,590) and Point 49 (£15,900) on the National Joint Council Scales (Principal Officer) inclusive of London Allowance.

Further particulars and application forms may be obtained from:

The Director, Adult Literacy and Basic Skills Unit, Kingsbourne House, 229/231 High Holborn, London WC1V 7DA.
Tel: 01-405 4077

Closing date for applications is 14 days from the appearance of this advertisement.

ALBSU
Adult Literacy & Basic Skills Unit

Administration continued

PCAS Polytechnic Central Admissions System FINANCE/SECRETARIAT OFFICER

Applications are invited for the post of Finance/Secretariat Officer of this developing organisation based in Cheltenham, tenable from 1 January 1985 or as soon as possible thereafter.

The person appointed will be responsible to the Chief Executive for the preparation of estimates, and the associated control of income and expenditure, payroll, superannuation, personnel matters and the coordination of secretarial arrangements for Board and Committee business.

The post offers the opportunity for someone preferably, but not necessarily, professionally qualified to develop financial and administrative systems in a developing company within the public sector. Experience in Higher Education might be an advantage.

Initial salary within the scale £13,065 to £15,033 (under review) under conditions of service analogous to those for local government.

Further particulars obtainable from the Chief Executive, PCAS, PO Box 57, Cheltenham, Glos GL50 3AP, to whom applications should be addressed by Friday 30 November 1984. (17148)

Overseas continued

DEPUTY PRINCIPAL/ DIRECTOR OF STUDIES

**Mananga Agricultural Management Centre,
Swaziland**

The Mananga Agricultural Management Centre is a wholly owned project of the Commonwealth Development Corporation offering post-experience courses up to three months for middle to senior managers (aged 35 to 45) drawn from developing countries, the emphasis being on planning and control in agricultural management.

The Centre has a vacancy for a Deputy Principal/Director of Studies. Candidates should have a first degree, preferably in Economics, Agriculture or Business Studies and a professional qualification in management education. Agricultural Management experience in the developing world would be an additional advantage.

The successful candidate will design, implement, and evaluate training courses at Mananga in line with policies

agreed with the Principal and will be required to act as tutor and lecturer. He/she will also be part of the management team with responsibilities for the administration of the Centre.

The commencing pensionable salary will be up to £18,000, depending on experience. Other benefits include a non-contributory pension scheme with life cover and membership of a private medical plan. The usual benefits including salary uplift and educational assistance associated with an overseas posting will also apply.

Applicants should send full personal and career details to J. Corbett-Hillward, Personnel Executive, Commonwealth Development Corporation, 33 Hill Street, London W1A 3AR, quoting Serial Number 2150.



**Commonwealth
Development Corporation**

PRINCETON UNIVERSITY

Department of History

**Junior Position in
Modern German
History**

The Department of History at Princeton University solicits applications for a junior position in the History of German since 1800. Applicants should have a completed Ph.D. or be well along toward finishing their dissertation. Applicants should send a copy of a curriculum vitae, to arrive by November 20, to:

Jerrold E. Seigel
Department of History
Princeton University
Princeton, New Jersey 08544
U.S.A.

17048



THE NEW SOUTH WALES
INSTITUTE OF TECHNOLOGY
SYDNEY, AUSTRALIA
Equal Employment Opportunity
is Institute Policy

VICE-PRESIDENT

**A\$54,486 p.a.
(Subject to Indexation)**

The New South Wales Institute of Technology is a corporate institution of higher education established in 1985 whose object is to provide a range of studies and research opportunities for those wishing to enter or advance in professional work. The governing body of the Institute is the Council which is comprised of members nominated by the Minister, member elected by staff and students and ex officio members. The President is the chief executive officer of the Institute.

The teaching and research work of the Institute is carried out in eight faculties, namely: Architecture and Building, Business, Engineering, Humanities and Social Sciences, Law, Life Sciences, Mathematical and Computing Sciences and Science. In 1984 some 3000 students are engaged in studies leading to admission to Bachelor's and Master's degrees and the award of Graduate Diplomas.

The Council of the Institute now invites applications for appointment to the position of Vice-President. The Vice-President has a major role in creating policy for academic planning and the implementation of course work in the several faculties. In connection with this work the Vice-President will assume responsibility for educational facilities including the Library and the Computer Centre. Additionally the incumbent will work with the President in the general development and administration of the Institute and will deputise for the President in the latter's absence.

It is anticipated that applicants will possess high academic qualifications and can demonstrate experience in tertiary education administration at an appropriate level. A close appreciation of the educational needs of the industrial and commercial community would be expected.

CONDITIONS OF APPOINTMENT
Fares and a contribution toward removal expenses are provided for overseas appointees. A Housing Loan Scheme is also available. With consent of Council, academic staff are permitted to undertake limited consulting work.

Applications should include full details of academic and professional background. The names and addresses of three referees, from whom confidential reports may be obtained, should be included. In reply please quote reference No. 84/168. Applications close 18th November, 1984.

Details of conditions of employment and further information regarding this position can be obtained from:

The Director,
N.S.W. Government Office,
88 Strand,
LONDON WC2N 8LZ

9548

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Overseas continued



NGEE ANN POLYTECHNIC Republic of Singapore

Invites applications from suitably qualified persons for appointment as Lecturing Staff in the following Departments/Centres:

- Building
- Electrical and Electronic Engineering
- Mechanical Engineering
- Mathematics and Science

The Institution

Ngee Ann Polytechnic is a premier Government Polytechnic offering diploma courses equivalent to HND standard. The Polytechnic has a student enrolment of 6,987 and a full-time academic staff strength of 750 in the current academic year. The student population is expected to increase to 9,000 by 1986 with a proportionate increase in staff strength. The current annual operating budget of \$39.3m is expected to be increased to \$70m. The medium of instruction is English.

Qualifications

Candidates must have a good and recognised Honours University Degree and/or professional qualifications in a relevant field and have at least two years' relevant industrial/teaching experience in the following areas:

a) Building

Not less than two years' practical experience in one or more of the following areas: Building Services (Electrical, Mechanical, Water, Sanitary and/or Fire Protection Services) Building Maintenance Public Health Engineering Construction Pollution Control Building Automation

b) Electrical and Electronic Engineering

CAD/CAM
Computer Numerical Control of Machines
Robotics
Computer Communication
Computer Maintenance
Industrial Power Electronics
Electrical Installation Design
Computer Process Control
Electronic Instrumentation
Bio/Medical Electronics
Microprocessor Application

c) Mechanical Engineering

CAD/CAM/CAE
CNC
Robotics & FMS
Instrumentation & Control
Air-conditioning and Refrigeration
Plant Maintenance
Industrial Automation
Production Technology
Fabrication Technology
Heat Treatment

d) Mathematics and Science

Candidates must be able to teach both Mathematics and Computer Programming. Preference will be given to those who have at least three years' teaching and/or relevant working experience in Computing Science.

Gross Annual Emoluments

Gross Annual Emoluments range from \$31,068-\$51,107. (The present rate of exchange is £1=\$2.75).

The above figures include a current 13 1/2-month allowance and a 25% employer's contribution to the Singapore Central Provident Fund.

The levels of appointment and points of entry into the above salary range will be dependent upon qualifications and experience. Applicants need only apply for a Lecturing Appointment, giving details of qualifications and experience, and the Polytechnic will decide on final offer after interview.

Terms and Conditions of Service

Singaporeans and Malaysians will be offered appointments on local terms. Other successful candidates will be appointed on contract of three years' duration. Successful applicants will be eligible for medical/dental benefits, membership of Central Provident Fund and Child Care Centre facilities. In addition, contract staff will be eligible for free air passages for employee, wife and children, children's education allowance, housing allowance, commuted board and lodging allowance, baggage allowance, etc. Applicants will be supplied with details of terms and conditions of service if they are shortlisted for interview.

Applications

Interested persons should write to:

Head (Personnel),
Ngee Ann Polytechnic,
c/o Singapore High Commission,
5 Cheaham Street, London SW1

Giving their curriculum vitae, home telephone number, subjects they are able to teach, names and addresses of two referees. Applications close on 20th November 1984.

THES FORTHCOMING

Special Book Numbers

FOR 1984

November 16 Politics

23 Biological Sciences

December 7 Computer Service



NATIONAL UNIVERSITY OF SINGAPORE DEPARTMENT OF ANAESTHESIA

Applications are invited for teaching appointments in the Department of Anaesthesia which the University is planning to set up. Candidates should have relevant higher professional qualifications in Anaesthesia.

Gross annual emoluments range as follows:

Lecturer	\$30,660 - \$3,570
Senior Lecturer	\$57,590 - \$1,930
Associate Professor	\$89,300 - \$23,000
Professor	\$110,380 - \$45,740

(STGE1 = \$52.63 approximately)

The commencing salary will depend on the candidate's qualifications, experience and the level of appointment offered. In addition, appointees with an approved basic medical degree and relevant higher academic/professional qualifications may opt to retain consultation fees up to 60% of their annual gross salary or to receive a fixed annual clinical allowance as follows:

Lecturer	\$8,000/9,000
Senior Lecturer	\$15,000
Associate Professor	\$21,000
Professor	\$33,000

Leave and medical benefits are provided. Under the University's Academic Staff Provident Fund Scheme, the staff member and the University are each required to contribute at the present rate of 25% of his salary, the staff member's contribution being subject to a maximum of \$1,250 a month. The sum standing to the staff member's credit in the Fund is tax-free and may be withdrawn when the staff member leaves Singapore/Malaysia permanently.

Depending on the type of contract offered, other benefits may include: a settling-in allowance of \$1,000 (single) or \$2,000 (married), subsidised housing at a nominal rentals ranging from \$120 to \$216 p.m., education allowance for up to three children, subject to a maximum of \$10,000 per annum per child, passage allowance and baggage allowance for the transportation of personal effects to Singapore.

Application forms and further information on terms and conditions of service may be obtained from:

The Director,
Personnel Department,
National University of
Singapore,
Kent Ridge
Singapore 0511

NUS Overseas Office
c/o Singapore High Commission
In London
5 Cheaham Street,
London SW1. U.K.
Tel: (01) 235 4682
(020504)

KING SAUD UNIVERSITY RIYADH, SAUDI ARABIA

English Language Instructors

The Centre for European Languages and Translations at the College of Arts, King Saud University, urgently require ESU/EFL language instructors (male/female) for appointments beginning 28 January 1985.

Applicants must have one of the following qualifications:

- MA in TESL/TEFL
- MA in English, plus one year's experience at university level or two years' non university EFL experience.
- Free furnished accommodation or housing and furniture allowance.
- Free yearly return air ticket for incumbent and family.
- Children's educational allowance (non Arabic speakers only).
- Free medical/dental care covering family.
- 60 days' annual pre-paid leave (in proportion to contract).
- End of service gratuity.

Benefits Include:

- * Tax free salaries (based on qualifications and experience).
- * Monthly transport allowance.
- * Relocation allowance.
- * Free furnished accommodation or housing and furniture allowance.
- * Free yearly return air ticket for incumbent and family.
- * Children's educational allowance (non Arabic speakers only).
- * Free medical/dental care covering family.
- * 60 days' annual pre-paid leave (in proportion to contract).
- * End of service gratuity.

Immediate application is essential, and forms of application are available from:

Ms Carmel Donachie, King Saud University Office, 29 Belgrave Square, London SW1 8QB. Telephone: 01-235 7221 (answerphone).

(020514)

The Times Higher Education Supplement

Special Book Numbers for 1985

FEBRUARY

- 15 European Studies
- 22 Philosophy

MARCH

- 1 Environmental Sciences (I)
- 8 History (I)
- 15 Maths and Physics (I)
- 22 Social Policy
- 29 English

APRIL

- 12 Psychology (I)
- 12 Law
- 26 Computer Studies (I)

MAY

- 3 Sociology (I)
- 10 Chemistry
- 17 American Studies
- 24 Economics (I)
- 31 Biological Sciences (I)

JUNE

- 7 Education (I)
- 14 Engineering

OCTOBER

- 4 Environmental Sciences (II)
- 11 History (II)
- 18 Maths and Physics (II)

NOVEMBER

- 1 Psychology (II)
- 8 Economics (II)
- 15 Biological Sciences (II)
- 22 Sociology (II)
- 29 Computer Studies (II)

DECEMBER

- 6 Education (II)